PPPO Environmental Geographic Analytical Spatial Information System (PEGASIS)

User Manual

May 2012

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PEGASIS Overview

The U.S Department of Energy – Portsmouth/Paducah Project Office (PPPO) Environmental Geographic Analytical Spatial Information System (PEGASIS) application provides a systematic approach to retrieve, display, and download analytical, geotechnical, and hydrological data, maps, and geophysical information for PPPO sites using a web browser. The information includes analytical sample results from various environmental studies, restoration reports and supporting documents, maps, facility drawings, and photography managed by the United States Department of Energy (US DOE) and its contractors.

PEGASIS is a secure Internet website that will allow project managers, US DOE, state and local officials, and scientists to have access to sampling data for hundreds of investigative wells and sampling events, Solid Waste Management Units (SWMUs), and site specific GIS features from all of the environmental studies at the site.

There are two basic types of user-interfaces available in PEGASIS; data-driven (analytical) web pages and a map-driven (GIS) interface. Each interface will provide essentially the same data but use different access methods to obtain the results.

- The data-driven (analytical) interface is an easy way to see the results of sample analyses based on user-defined criterion, such as area, SWMU, sample locations, sample dates, media, analytical parameter, qualifier (i.e., detect, non-detect, all), and depths. Output from these queries can be displayed in a web page or downloaded in either an Excel® Spreadsheet or as a comma-delimited text file. Some types of data (groundwater levels, for example) can be dynamically graphed.

- The map-driven (GIS) interface allows users to generate maps showing, for example, locations of features, buffers extents, or to show the spatial relationships between sample locations and other features, such as buildings, creeks, or storage facilities.

Analytical Data Viewer

The data-driven web pages option allows access to analytical data, well and borehole information, and geoscience information. These options include:

- An option that allows the user the select environmental sample analytical data from multiple dynamic menus/lists. These menus allow the user to specify the area, SWMU, sample locations, media, analytical parameter, qualifier (i.e., detect, non-detect, all), and depths. These data are then displayed in a web page. For groundwater results, a temporal trend can be dynamically graphed or the data can be downloaded via an Excel® spreadsheet for further manipulation.

- Options that allow the user to select well and borehole information. These will allow the user to specify a well and retrieve well logs or well development information. These pages will also allow the user to specify a well and retrieve groundwater level surface data. The groundwater level surface data can be displayed in a web page and the hydrograph dynamically graphed or the data can be downloaded via an Excel® spreadsheet for further manipulation.

GIS Viewer

The map-driven (GIS) web pages provide an easy-to-use interface to help users visualize the spatial relationships among the variety of features and sampling locations associated with the PPPO sites. In addition, analytical data can be queried and displayed in tables or downloaded for use in other software applications such as modeling or statistics.

The Site GIS Viewer includes basic map tools for zoom-in; zoom-out; zoom-extents; zoom-last; pan; hyperlink; identify feature; find; measure distance; set units; buffer; select by line/polygon; select by rectangle; and print. Additional tools include various types of analytical queries (by circle, rectangle, polygon, or buffer) and the ability to download features in a format suitable for most GIS applications.

Some of the options of the GIS Viewer include:

- A page that allows the user to select buildings or land areas, plume areas, named streams or water bodies from dynamic menus/lists. The GIS map page will dynamically zoom to the requested selection.

- A page that allows the user to select sample locations from a dynamic menu/list. The GIS map page will dynamically zoom to the requested selection.

- A page that allows the user to select environmental sample analytical data from a dynamic menu/list. The page will allow the user to specify which analytical parameter and a result criteria of all, detects or concentration to exceed. The analytical results for the query will be displayed in a web page and the locations matching the criteria will be dynamically displayed on the site map.

Sources of Data

PEGASIS provides a systematic approach to retrieve and display analytical data, maps, hydrological data, and geophysical information using a web browser. The information includes analytical sample results from various environmental media, restoration reports and supporting documentation, maps, facility drawings, and photography for environmental locations managed by DOE and the PPPO site contractors.

Analytical Data

The primary and most comprehensive source of the analytical data is from local versions of the Oak Ridge Environmental Information System (OREIS) supported in ORACLE® databases on servers located at the PPPO sites. Periodically, data downloaded from the OREIS databases are loaded into their corresponding site within PEGASIS. These downloads are subsequently processed using a rule-based procedure to be reformatted for use within PEGASIS. This processing, however, requires much effort and time to ensure that the OREIS data is reformatted to include a defined standard for analytical parameter names, parameter units, depth units, sample dates, location types, and redundant or missing data. Consequently, PEGASIS has the most up-to-date, accurate, and complete set of analytical data for the site.

GIS Data

The GIS Viewer was developed by creating the GIS datasets (also called Layers or Features) into ArcGIS® geodatabase format following the Spatial Data Standards for Facilities, Infrastructure, and the Environment (SDSFIE) standard. SDSFIE was developed for the Federal Government and its contractors and provides basic data standards for use with geographic information system (GIS) and similar computerized geospatial data systems. Geospatial data systems are computerized systems that employ information concerning the natural and constructed (man-made) “real-world” features (objects), referenced to their specific locations on the earth. The term SDSFIE now covers both the graphic and non-graphic portions of the standard. The non-graphic portions of the standard were formerly called FMSFIE (Facility Management Standards for Facilities, Infrastructure, and the Environment). The GIS Viewer stores all geographic coordinate data using the Kentucky State Plane Coordinate System (South), based on the North American Datum of 1983. All measurements are in U.S. feet.

The datasets used to build the geodatabase came from a variety of sources including PPPO site environmental department staff or contractors, Federal, State, and local agencies, and university researchers. These datasets were previously (or may still be) maintained in various electronic GIS and CAD formats and coordinate systems. Many of these datasets, therefore, were usually converted from the PPPO site coordinate system (NAD 27 in feet) into the geodatabase coordinate system.

Existing plant map layers generated by PPPO site environmental department staff and contractors were collected and converted. The PPPO site GIS layers and regional 50-mile radius map layers (created and developed from the Risk Based End State project) were loaded into ESRI ArcGIS® geodatabase format via the ArcCatalog® tool which is a part of ESRI’s ArcGIS® software. The sample location features for investigative wells, soil samples, surface water, waste water and National Pollution Discharge Elimination System (NPDES) were converted into ArcSDE® point features from the easting and northing coordinates currently maintained in the local versions of OREIS.

The ArcGIS® geodatabase provides a lot of functionality for PEGASIS. Some of the functionality includes:

- Layer versioning;
- Raster data loading;
- Dynamic linking of features to the analytical data warehouse; and
- Multi-user access

The last feature, multi-user access, is important, as all web users will see the most up to date map features.

Soil Borings and Well Log Data

Geoscience reports were retrieved from PPPO site environmental department staff or contractors. Pertinent geotechnical and hydrologic data from these reports were extracted, scanned, and placed into the geoscience data warehouse as Adobe Acrobat® PDF files. Each PDF document is associated (or hot-linked) to each boring and/or well location. By clicking on each point, individual log information is readily displayed in an Adobe Acrobat® PDF viewer window.

Geological Data

Geotechnical lithologic data were retrieved from PPPO site environmental department staff or contractors, including researchers. Whenever possible, the geotechnical lithologic data was downloaded electronically and stored in the appropriate geoscience data warehouse tables. These data include the borehole/well location, easting, northing, source, ground elevation, top and bottom lithologic unit elevations, and top and bottom lithologic unit depths.

Well Development Data

Well development data was retrieved from PPPO site environmental department staff or contractors and stored in the appropriate geoscience data warehouse tables. These data include the borehole/well location name, alias name, easting, northing, land surface elevation, measuring point elevation, top and bottom well component elevations, top and bottom well component depths, and miscellaneous well characteristics, such as slot size, casing diameters and materials.

Accessing the System

To access the test version of PEGASIS, type the following URL address in your web browser:

http://padgis.latakentucky.com/padgis/

System Requirements

For PEGASIS to function properly, you MUST be sure that your web browser meets the following requirements:

- Allow pop-up windows to be displayed

  Note: If you have a toolbar installed separate from the browser, you will need to check the pop-up settings on it as well.

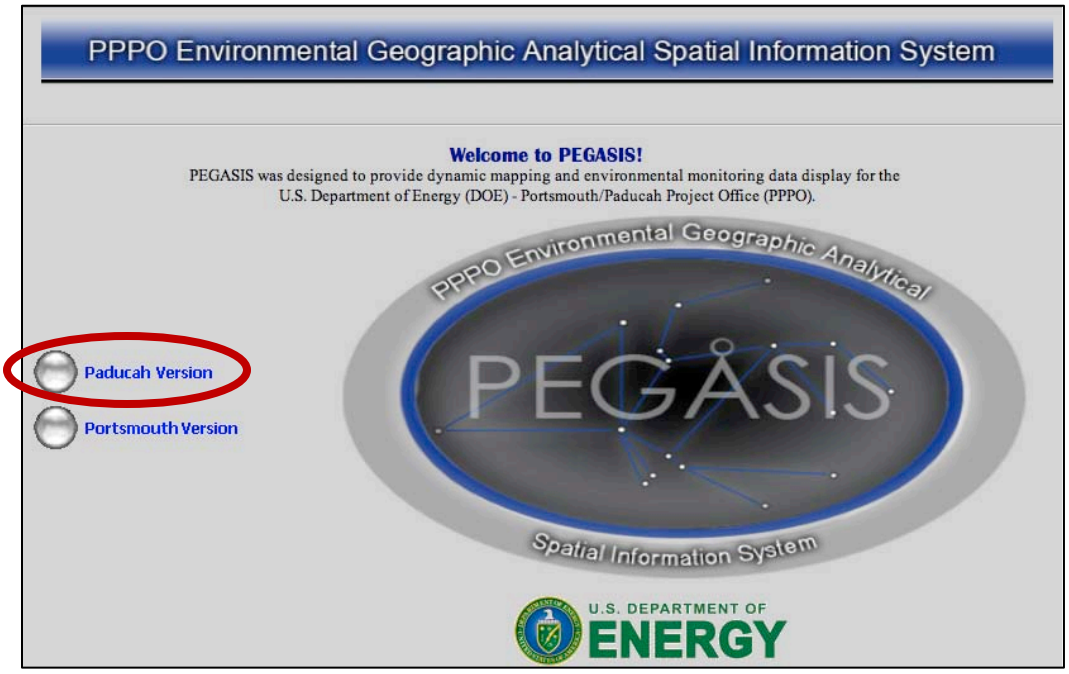
- Java Runtime Environment must be installed

- Java Applets set to enabled

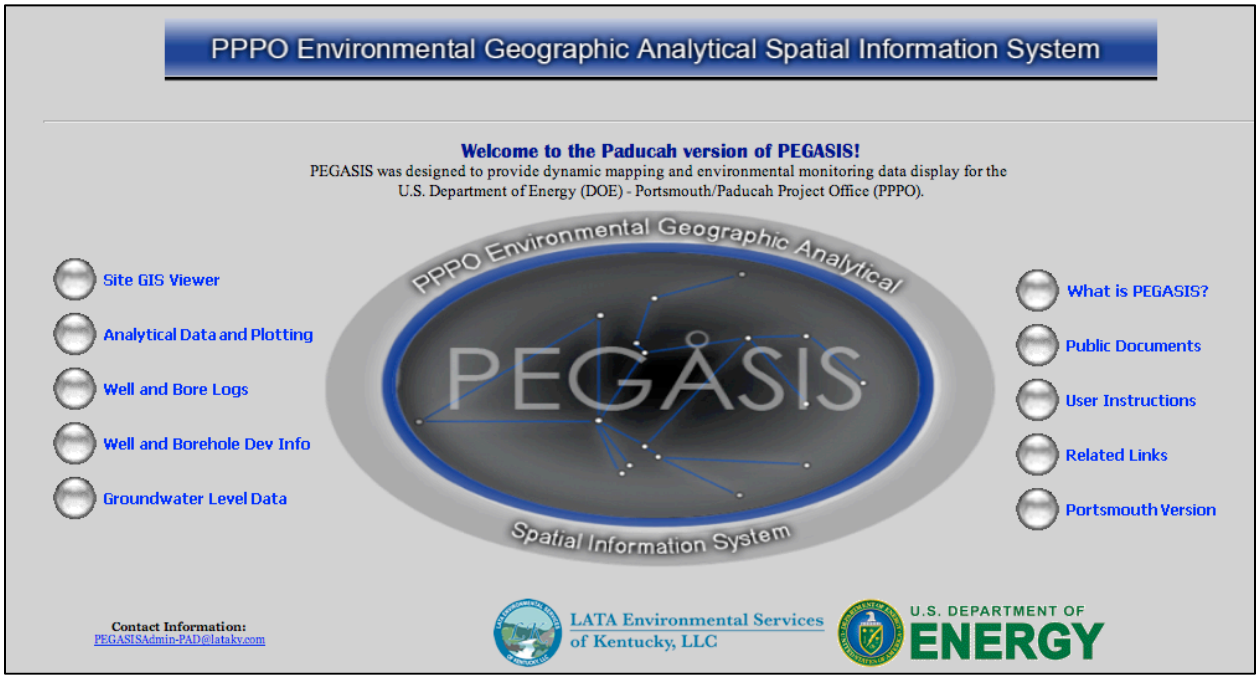
System Homepage

Upon entering PEGASIS, a user must select a site to query within the PPPO (either Paducah or Portsmouth). Once selected the user is then logged into the system anonymously.

Note: At this time, the only version available is Paducah. This manual contains the user instructions as it applies to the Paducah selection for the time being.


PPPO Environmental Geographic Analytical Spatial Information System
Welcome to PEGASIS!
PEGASIS was designed to provide dynamic mapping and environmental monitoring data display for the U.S. Department of Energy (DOE) - Portsmouth/Paducah Project Office (PPPO).
Paducah Version
Portsmouth Version
PPPO Environmental Geographic Analytical
PEGASIS
Spatial Information System
U.S. DEPARTMENT OF ENERGY

Upon selecting *Paducah Version*, the Paducah version of the PEGASIS homepage is displayed.


PPPO Environmental Geographic Analytical Spatial Information System
Welcome to the Paducah version of PEGASIS!
PEGASIS was designed to provide dynamic mapping and environmental monitoring data display for the U.S. Department of Energy (DOE) - Portsmouth/Paducah Project Office (PPPO).
Site GIS Viewer
Analytical Data and Plotting
Well and Bore Logs
Well and Borehole Dev Info
Groundwater Level Data
PPPO Environmental Geographic Analytical
PEGASIS
Spatial Information System
What is PEGASIS?
Public Documents
User Instructions
Related Links
Portsmouth Version
Contact Information:
PEGASISAdmin-PAD@lataky.com
LATA Environmental Services of Kentucky, LLC
U.S. DEPARTMENT OF ENERGY

The homepage offers five (5) menu options on the left hand side to query data from. Please click the links below to redirect to the appropriate user manual section.

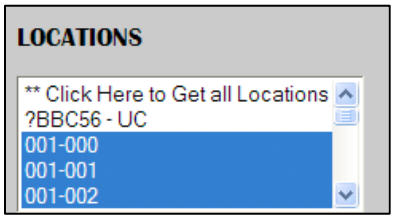
1. Site GIS Viewer
2. Analytical Data and Plotting
3. Well and Bore Logs
4. Well and Borehole Dev Info
5. Groundwater Level Data

The homepage offers five (5) menu options for general information on the right hand side.

1. What is PEGASIS?
    a. This link provides a general overview of PEGASIS.
2. Public Documents
    a. Public Documents will open a new web page redirecting the user to the public facing website containing a list of public documents of the selected location within the PPPO.
3. User Instructions
    a. User Instructions will open a new web page containing a PDF of the PEGASIS user manual.
4. Related Links
    a. Related Links will open a page within the selected location of the PPPO that contains links to outside website locations that are related to PEGASIS.
5. Portsmouth Version
    a. Within the Paducah version of PEGASIS, the Portsmouth Version link will redirect the user to the Portsmouth version of PEGASIS. As of May 2012, this link is not yet active.

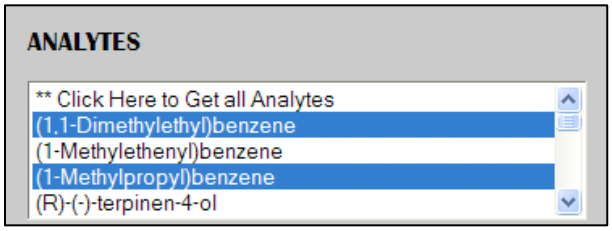
Using Selection Options

PEGASIS uses standard Microsoft Windows® keys to select and deselect items from menus and drop-down lists utilized throughout the system.



To select contiguous items in lists as shown in the example to the left with LOCATIONS, do the following:

- Left-Click on the 1st item to be selected
- Hold down the SHIFT key
- Left-Click on the last item to be selected
- All items between the two (2) clicks will be selected



To select non-contiguous items as shown in the example to the left with ANALYTES, do the following:

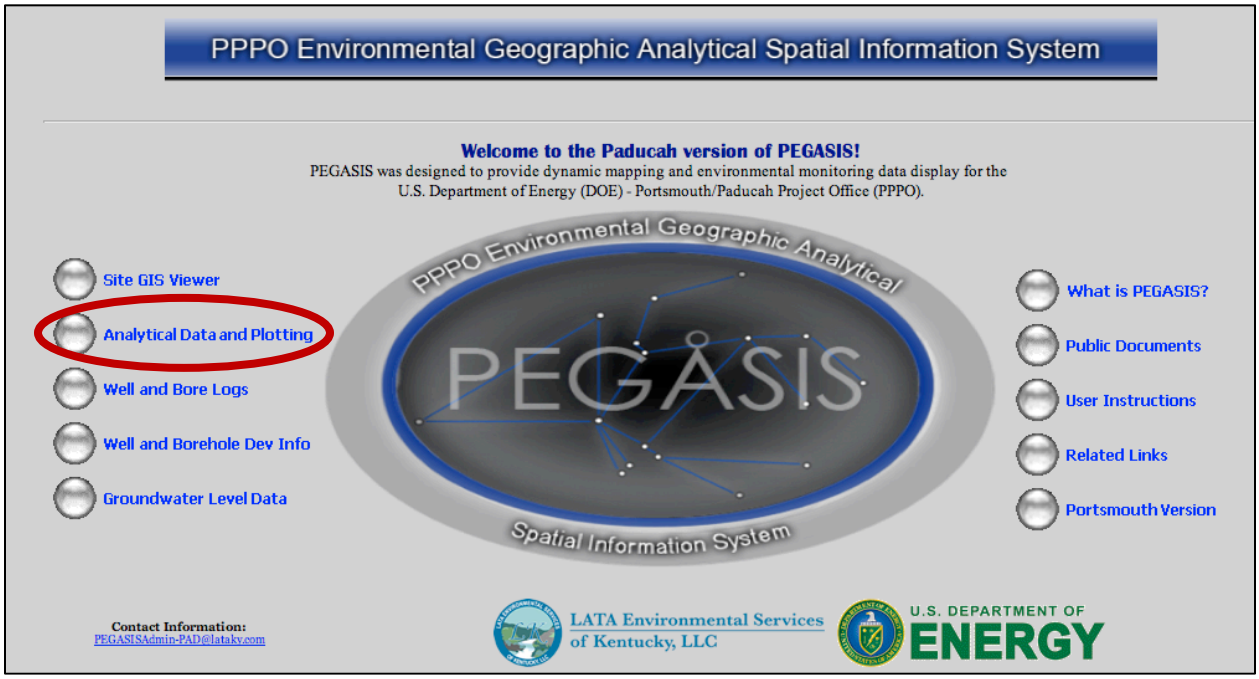
- Left-Click on the 1st item to be selected
- Hold down the CONTROL (Ctrl) key
- Left-Click each subsequent selection

To de-select items which were selected from either of the two (2) selection methods above, do the following:

- Hold down the CONTROL (Ctrl) key
- Left-Click each item to be de-selected

To help speed through a long drop-down list of items, type the first letter/number of the item of interest. The drop-down list will jump to the first item that starts with the typed letter/number.

Analytical Data and Plotting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Welcome to the Paducah version of PEGASIS!
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Contact Information:
PEGASISAdmin-PAD@lataky.com
LATA Environmental Services of Kentucky, LLC
U.S. DEPARTMENT OF ENERGY

PEGASIS provides a data-driven interface called the **Analytical Data Viewer** for users to search for analytical data from sampling events at the sites of the PPPO. To use the **Analytical Data and Plotting** option of ***PEGASIS***, do the following:

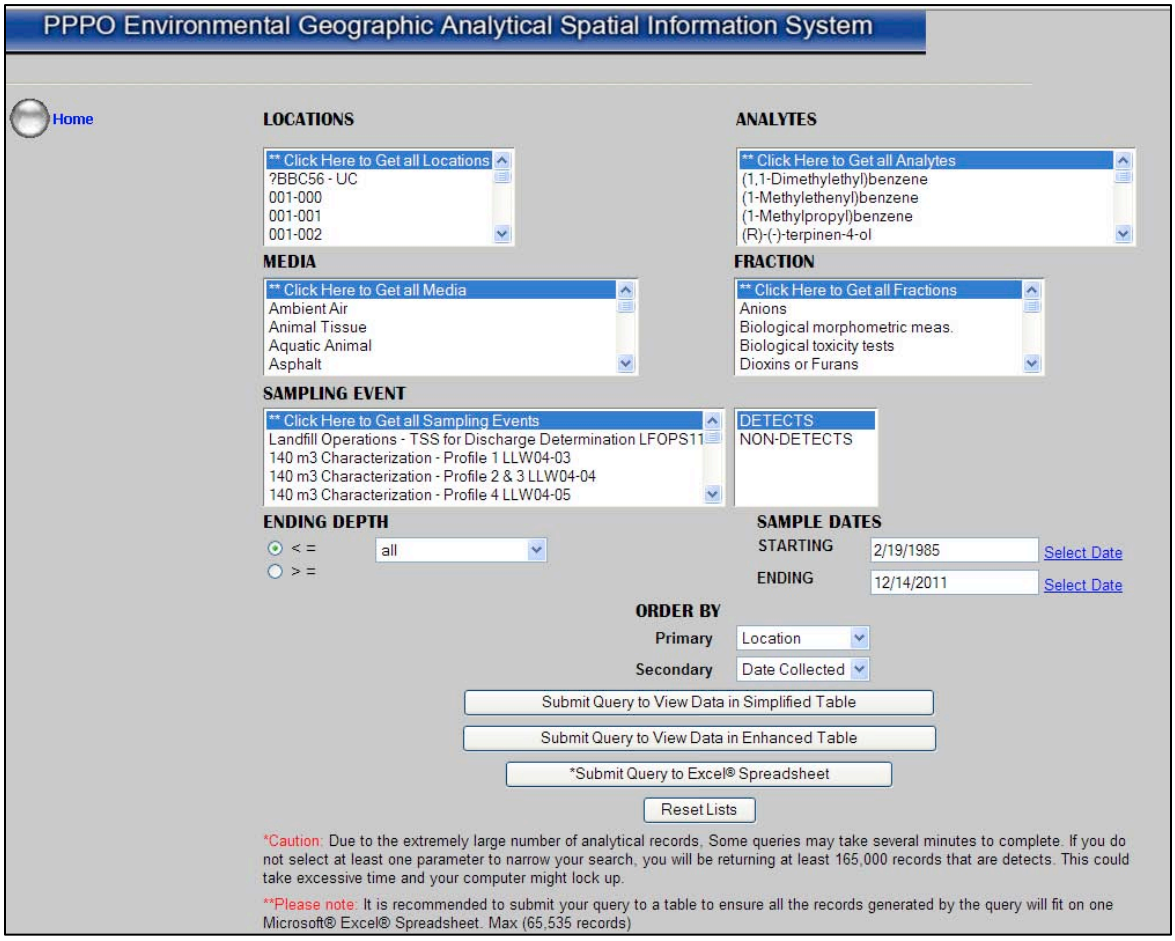
- *Left-Click* on the **Analytical Data and Plotting** button on the homepage

The **Analytical Data Viewer** user interface will open providing multiple drop-down lists, menus, options, and user input boxes. From this screen, a user can generate simple to sophisticated queries to meet their needs and return the results in either web browser tables or download Excel® spreadsheet and comma-delimited text files.

Data may be searched by any combination of the following criteria:

- Location(s)
- Analyte(s)
- Media
- Fraction(s)
- Sample Dates
- Sampling Event
- Analyte was Detected
- Analyte was Not Detected
- Ending Depth

Layout of the Analytical Data Viewer


PPPO Environmental Geographic Analytical Spatial Information System
Home
LOCATIONS
** Click Here to Get all Locations
?BBC56 - UC
001-000
001-001
001-002
ANALYTES
** Click Here to Get all Analytes
(1,1-Dimethylethyl)benzene
(1-Methylethenyl)benzene
(1-Methylpropyl)benzene
(R)-(-)-terpinen-4-ol
MEDIA
** Click Here to Get all Media
Ambient Air
Animal Tissue
Aquatic Animal
Asphalt
FRACTION
** Click Here to Get all Fractions
Anions
Biological morphometric meas.
Biological toxicity tests
Dioxins or Furans
SAMPLING EVENT
** Click Here to Get all Sampling Events
Landfill Operations - TSS for Discharge Determination LFOPS11
140 m3 Characterization - Profile 1 LLW04-03
140 m3 Characterization - Profile 2 & 3 LLW04-04
140 m3 Characterization - Profile 4 LLW04-05
DETECTS
NON-DETECTS
ENDING DEPTH
< =
> =
all
SAMPLE DATES
STARTING
2/19/1985
Select Date
ENDING
12/14/2011
Select Date
ORDER BY
Primary
Location
Secondary
Date Collected
Submit Query to View Data in Simplified Table
Submit Query to View Data in Enhanced Table
*Submit Query to Excel® Spreadsheet
Reset Lists
*Caution: Due to the extremely large number of analytical records. Some queries may take several minutes to complete. If you do not select at least one parameter to narrow your search, you will be returning at least 165,000 records that are detects. This could take excessive time and your computer might lock up.
**Please note: It is recommended to submit your query to a table to ensure all the records generated by the query will fit on one Microsoft® Excel® Spreadsheet. Max (65,535 records)

The **Analytical Data Viewer** provides a series of drop-down lists, user input boxes, and options to help users create simple or more sophisticated queries to find analytical data from sampling events at the sites of the PPPO.

The drop-down lists are created dynamically from all of the analytical data stored in PEGASIS. These lists include *Named Sample Locations, Sampling Events and Projects, Available Samples (media), Analytes, Fractions*, and *Depths*. Options include *Starting and Ending Sampling dates, Detects or Non-detects, Simple or Enhanced Tables*, and *Excel® Spreadsheet downloads*.

Note: As PEGASIS is periodically updated, these lists will change to reflect those updates.

The **Analytical Data Viewer** is used as both a stand-alone query builder or in conjunction with certain query functions of the Site GIS Viewer. When used with the Site GIS Viewer, the major difference is that the drop-down *List of Sample Locations*, *List of Analytes*, and the *List of Available Fractions* will only contain values that correspond to the currently selected features in the Site GIS Viewer. For example, if three monitoring wells are selected in the Site GIS Viewer, the **Analytical Data Viewer** will only have those three wells available in the *List of Sample Locations* drop-down list.

Creating an Analytical Data Query

The **Analytical Data Viewer** provides multiple drop-down lists and input boxes to help users create simple or sophisticated queries to search for analytical data.

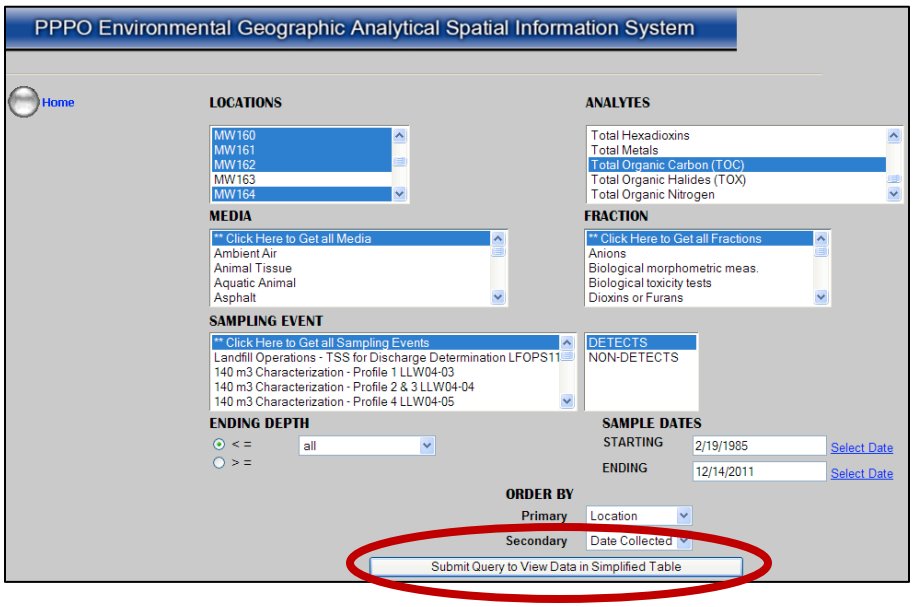
To build a query,

- Select as many locations, analytes, media, fractions, sampling events, detects or non-detects as necessary. *Defaults are **all** analytes, media, fractions, and sampling events*.
- *Optionally*, choose a value for ending depth and either the greater than or equal radial button or less than or equal radial button.
- *Optionally*, select starting and ending dates.
- *Optionally*, select what fields you would like to sort the data in the Order By pull-down lists.
- Click on the appropriate button to either *Submit Query to View Data in Simplified Table* or *Submit Query to View Data in Enhanced Table* or *Submit Query to Excel® Spreadsheet*.

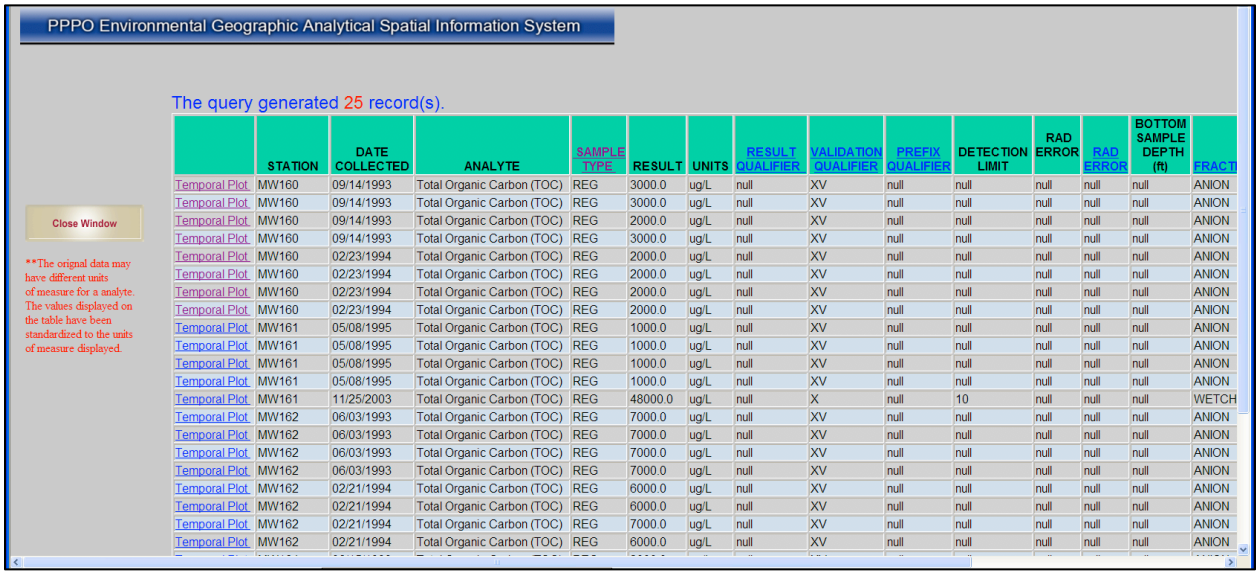
Use the Reset Lists button to clear the last query.

As an example, to query all detectable Total Organic Carbon (TOC) for all media, fractions and sampling events for multiple locations:

- Select multiple id numbers in the *LOCATIONS* list
- Select "Total Organic Carbon (TOC)" in the *ANALYTES* list
- Click the *Submit Query to View Data in Simplified Table* button



Upon clicking the button, a new window will open to display the results of the query.


PPPO Environmental Geographic Analytical Spatial Information System
The query generated 25 record(s).
Close Window
**The orignal data may have different units of measure for a analyte. The values displayed on the table have been standardized to the units of measure displayed.

	STATION	DATE COLLECTED	ANALYTE	SAMPLE TYPE	RESULT	UNITS	RESULT QUALIFIER	VALIDATION QUALIFIER	PREFIX QUALIFIER	DETECTION LIMIT	RAD ERROR	RAD ERROR	BOTTOM SAMPLE DEPTH (ft)	FRACT
Temporal Plot	MW160	09/14/1993	Total Organic Carbon (TOC)	REG	3000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	09/14/1993	Total Organic Carbon (TOC)	REG	3000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	09/14/1993	Total Organic Carbon (TOC)	REG	2000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	09/14/1993	Total Organic Carbon (TOC)	REG	3000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	02/23/1994	Total Organic Carbon (TOC)	REG	2000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	02/23/1994	Total Organic Carbon (TOC)	REG	2000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	02/23/1994	Total Organic Carbon (TOC)	REG	2000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW160	02/23/1994	Total Organic Carbon (TOC)	REG	2000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW161	05/08/1995	Total Organic Carbon (TOC)	REG	1000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW161	05/08/1995	Total Organic Carbon (TOC)	REG	1000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW161	05/08/1995	Total Organic Carbon (TOC)	REG	1000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW161	05/08/1995	Total Organic Carbon (TOC)	REG	1000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW161	11/25/2003	Total Organic Carbon (TOC)	REG	48000.0	ug/L	null	X	null	10	null	null	null	WETCH
Temporal Plot	MW162	06/03/1993	Total Organic Carbon (TOC)	REG	7000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	06/03/1993	Total Organic Carbon (TOC)	REG	7000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	06/03/1993	Total Organic Carbon (TOC)	REG	7000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	06/03/1993	Total Organic Carbon (TOC)	REG	7000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	02/21/1994	Total Organic Carbon (TOC)	REG	6000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	02/21/1994	Total Organic Carbon (TOC)	REG	6000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	02/21/1994	Total Organic Carbon (TOC)	REG	7000.0	ug/L	null	XV	null	null	null	null	null	ANION
Temporal Plot	MW162	02/21/1994	Total Organic Carbon (TOC)	REG	6000.0	ug/L	null	XV	null	null	null	null	null	ANION

The result of this example query shows all detectable Total Organic Carbon (TOC) for all media and sampling events in order of data collected for the selected sample locations.

Note: The screen capture above does not depict the full result table. Use the scroll bars at the bottom and right of the page to view the remaining rows and columns.

Close Window

The Qualifiers shown in the data table may be combinations of the codes and descriptions listed below

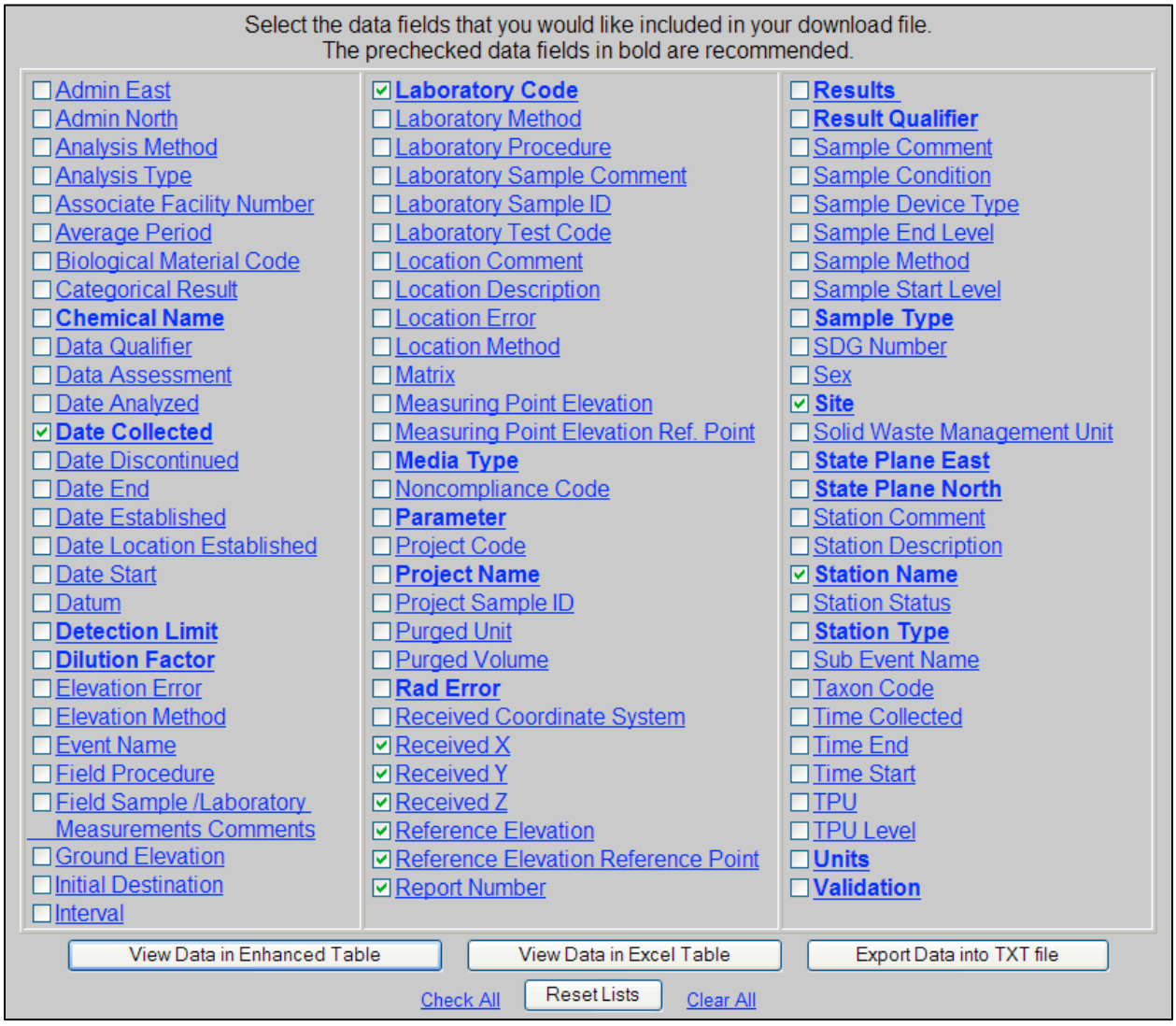
CODE	DESCRIPTION
?	Other, defined in COMMENTS column
DI	Deionized Water used for preparing blanks, etc.
DIL	Laboratory dilution
FB	Field Blank
FR	Field Replicate (Code used for Field Duplicate)
PRBL	Preservative blank
RB	Refrigerator blank
REG	Regular
REG2	Regular sample, secondary analysis
REP	Replicate
REP1	Replicate 1
REP2	Replicate 2
REP3	Replicate 3
REP4	Replicate 4
RI	QC Equipment Rinsate/Decon
TB	Trip Blank
TLC	Toxicity Laboratory Control Sample

If there is text displayed with an underline, it serves as a hyperlink to provide additional information about the item.

For example, clicking *SAMPLE TYPE* will open a new window (shown left) that provides a table of the code used and its description.

Submit Query to View Data in Enhanced Table

Another option on the **Analytical Data Viewer** is the *Submit Query to View Data in Enhanced Table* button. Clicking this option will present another window similar to the image below.



On this screen, select different columns of data than what is usually given as the default. Default data columns are in bold and pre-checked.

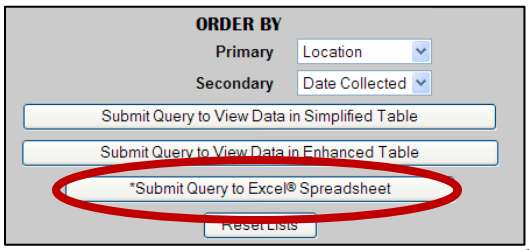
You can check all columns or clear all columns using the appropriate buttons on the bottom of the window.

When you have selected the desired data fields to display, click on the *View Data in Enhanced Table* button in this second window to see the results of the query. The lower image illustrates the results of this query in an enhanced table.

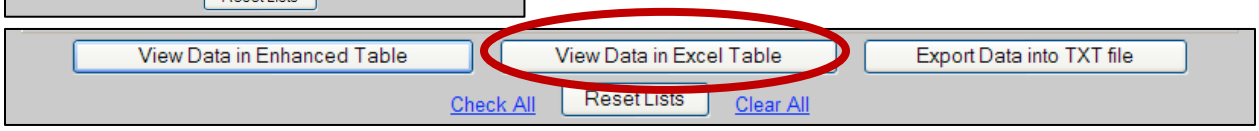
D_COLLECTED	LAB_CODE	RCVD_X	RCVD_Y	RCVD_Z	RF_ELV_VAL	RF_ELV_TYPE	REP_NO	SITE	STA_NAME
02/23/1994	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
02/23/1994	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
02/23/1994	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
09/14/1993	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
09/14/1993	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
02/23/1994	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
09/14/1993	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
09/14/1993	PGDP	-6945.9	-971.9	null	null	null	null	PAD	MW160
05/08/1995	PGDP	-6916.9	-1666.7	null	null	null	null	PAD	MW161
05/08/1995	PGDP	-6916.9	-1666.7	null	null	null	null	PAD	MW161
11/25/2003	PGDP	-6916.9	-1666.7	null	null	null	null	PAD	MW161
05/08/1995	PGDP	-6916.9	-1666.7	null	null	null	null	PAD	MW161
05/08/1995	PGDP	-6916.9	-1666.7	null	null	null	null	PAD	MW161
06/03/1993	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
02/21/1994	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
02/21/1994	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
02/21/1994	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
06/03/1993	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
06/03/1993	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
02/21/1994	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
06/03/1993	PGDP	-6886.2	-1666.8	null	null	null	null	PAD	MW162
06/15/1993	PGDP	-2034.2	-1415.6	null	null	null	null	PAD	MW164
06/15/1993	PGDP	-2034.2	-1415.6	null	null	null	null	PAD	MW164
06/15/1993	PGDP	-2034.2	-1415.6	null	null	null	null	PAD	MW164
06/15/1993	PGDP	-2034.2	-1415.6	null	null	null	null	PAD	MW164

Submit Query for Download

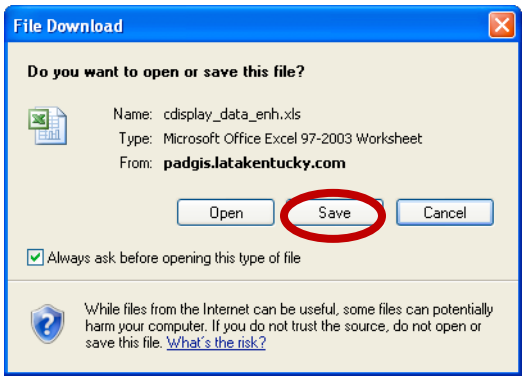
Users may want to download the results of queries into files for use in other applications such as spreadsheets and modeling applications. The **Analytical Data and Plotting** query provides two methods to generate either an Excel® spreadsheet file or as an ASCII text file format.

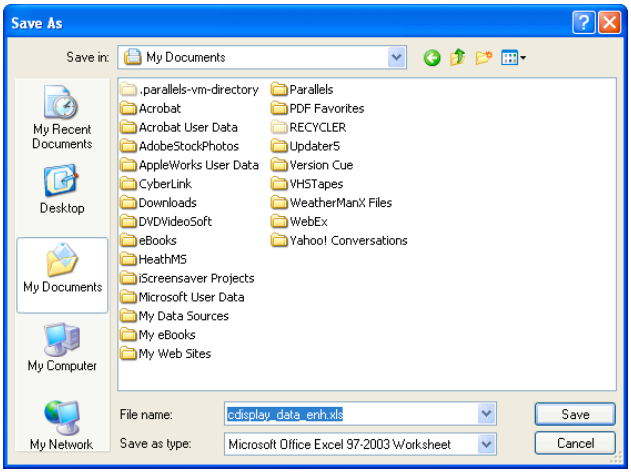


Buttons to *Submit Query to Excel® Spreadsheet* file are available from both the general query window and the enhanced table window.

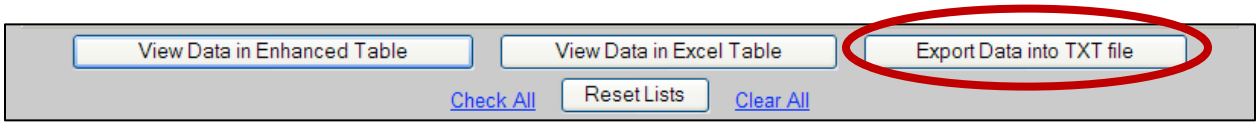


When an Excel® spreadsheet file is requested, users will be prompted to either open the requested file or save it to disk. When the *Save* option is clicked, a standard Windows File Dialog box will open requesting the name and disk space to save the file.

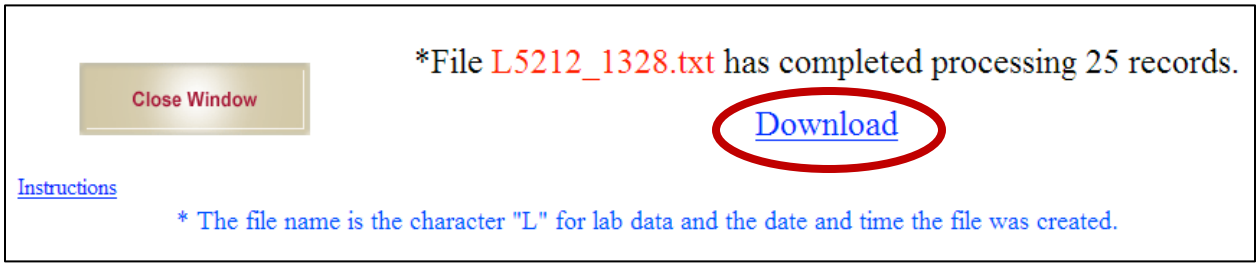

File Download
Do you want to open or save this file?
Name: cdisplay_data_enh.xls
Type: Microsoft Office Excel 97-2003 Worksheet
From: padgis.latakentucky.com
Open
Save
Cancel
Always ask before opening this type of file
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?



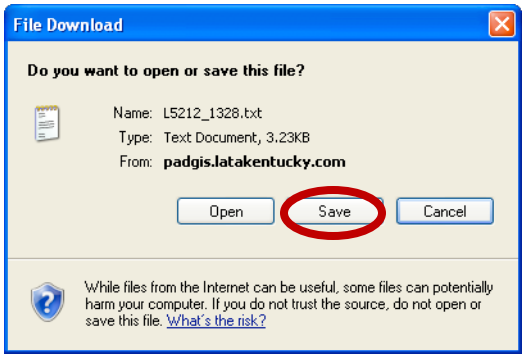
The *Export Data into TXT File* is only available from the Enhanced Table Window.



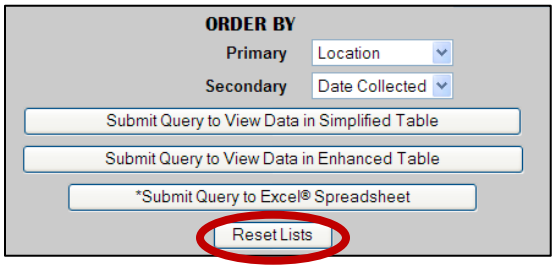
When an ASCII text file format is requested, a window will inform the user that the file has been created. Users must initiate the download of the text file by clicking the *Download* hyperlink on this window.


Close Window
*File L5212_1328.txt has completed processing 25 records.
Download
Instructions
* The file name is the character "L" for lab data and the date and time the file was created.

Once *Download* has been clicked, users will be prompted to either open the requested file or save it to disk. When the *Save* option is clicked, a standard Windows File Dialog box will open requesting the name and disk space to save the file.

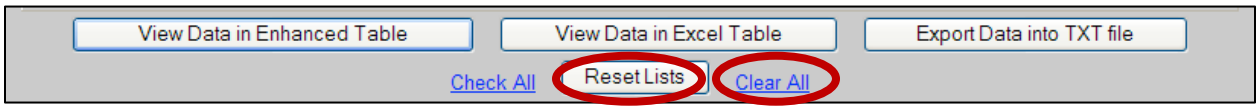

File Download
Do you want to open or save this file?
Name: L5212_1328.txt
Type: Text Document, 3.23KB
From: padgis.latakentucky.com
Open
Save
Cancel
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

Clearing and Resetting Queries



To reset or clear the query, click the *Reset Lists* button at the bottom of the screen. This will reset all of the lists to the default selections and clear any selections that have been made.

In the Enhanced Table screen, there is a *Reset Lists* button at the bottom as well as a *Clear All* link.

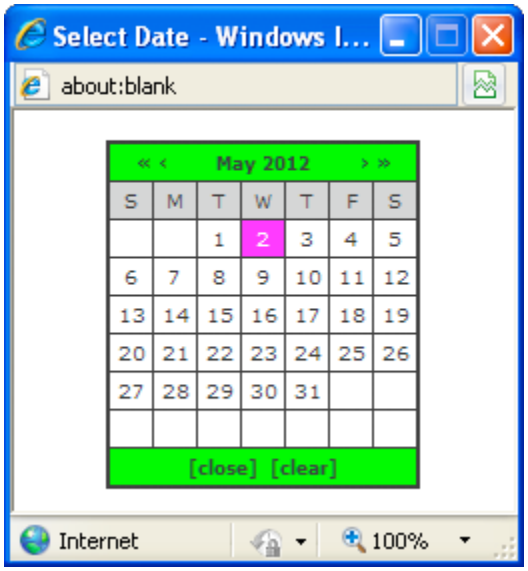


Other Features

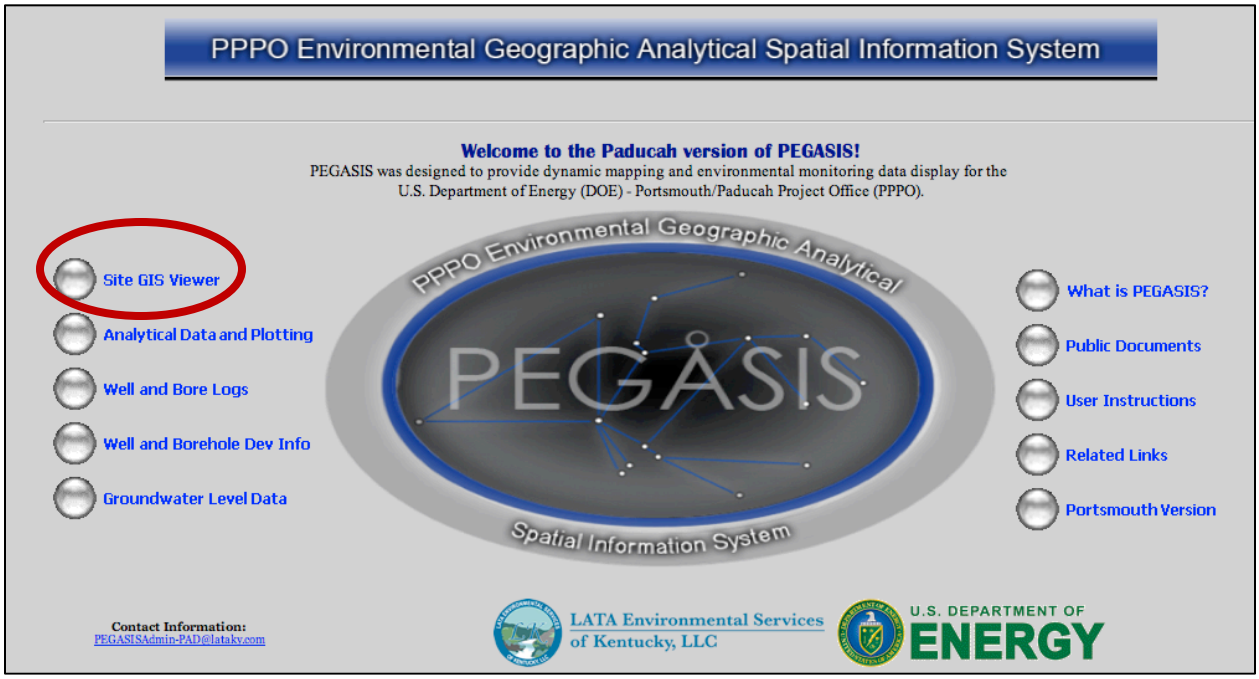
Some of the selectable fields in the Analytical Data Query window are populated with available parameters. Locations, Analytes, Projects, and Fractions have only values of data that are in PEGASIS.

A standard web calendar is also available to help select appropriate dates to query. To view and use the calendar, do the following:

- Click the *Select Date* link next to either the Starting or Ending Sample Dates field.
- A pop up window will appear with a calendar.
- Using the arrows to the left and right of the Month-Year title, users can navigate to the sample date of interest.



Site GIS Viewer

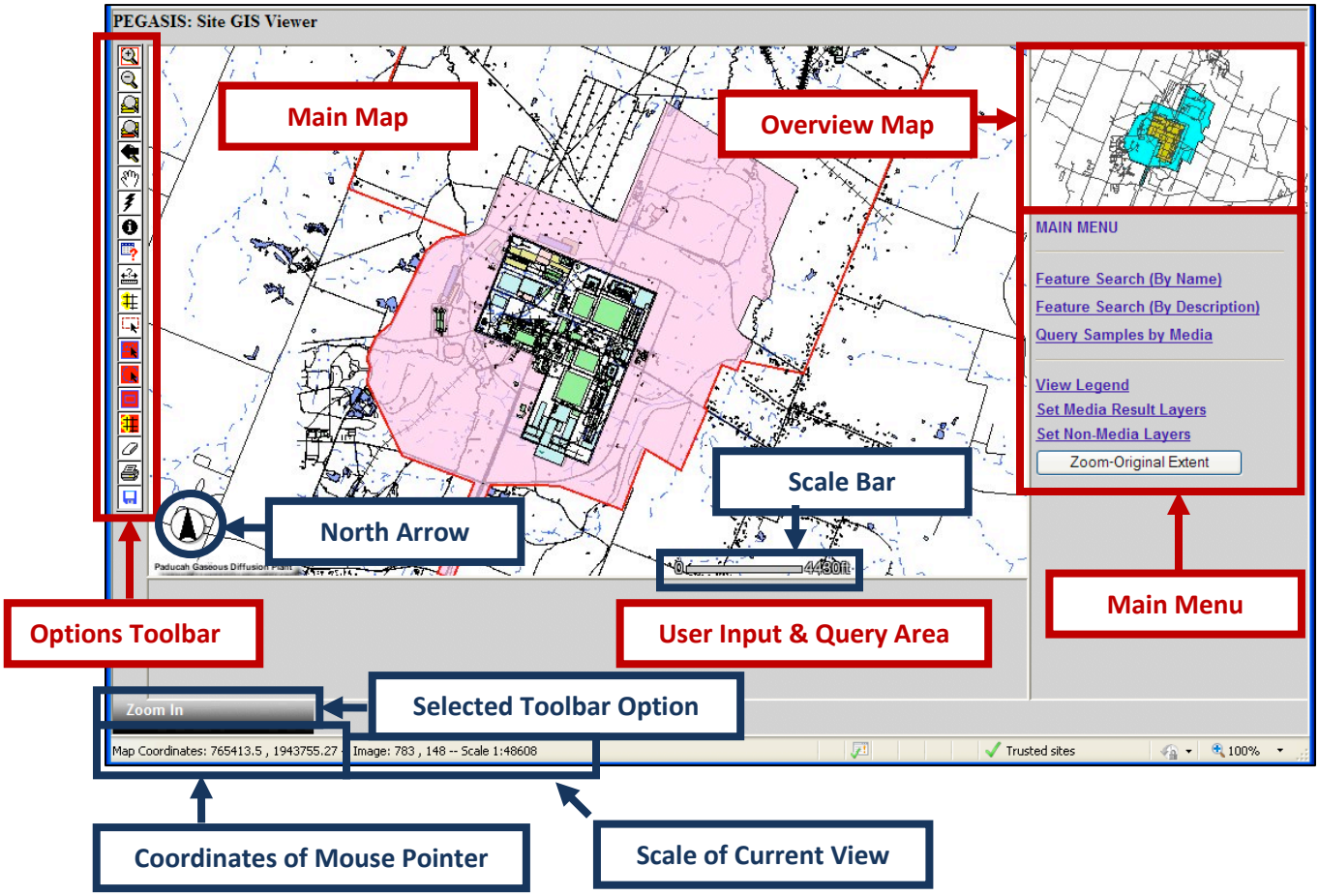

PPPO Environmental Geographic Analytical Spatial Information System
Welcome to the Paducah version of PEGASIS!
PEGASIS was designed to provide dynamic mapping and environmental monitoring data display for the U.S. Department of Energy (DOE) - Portsmouth/Paducah Project Office (PPPO).
Site GIS Viewer
Analytical Data and Plotting
Well and Bore Logs
Well and Borehole Dev Info
Groundwater Level Data
PPPO Environmental Geographic Analytical
PEGASIS
Spatial Information System
What is PEGASIS?
Public Documents
User Instructions
Related Links
Portsmouth Version
Contact Information:
PEGASISAdmin-PAD@lataky.com
LATA Environmental Services of Kentucky, LLC
U.S. DEPARTMENT OF ENERGY

The **Site GIS Viewer** is used to view GIS environmental layers, plot locations of sampling sites, and query data from PEGASIS using a graphical user interface that employs map and images of the sites of the PPPO.

To access the **Site GIS Viewer**, click the *Site GIS Viewer* button on the left hand side of the home page.

Note: Your web browser must be configured properly to allow pop-up windows to be displayed in order for the **Site GIS Viewer** to function properly.

Layout of the GIS Viewer



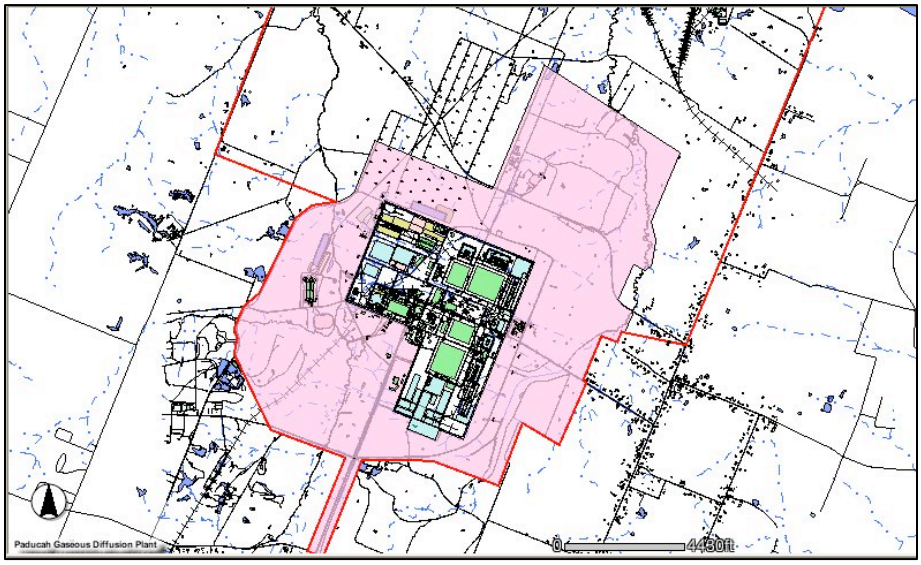
Above are the main **GIS Viewer** window and the default screen. The various user interaction components are labeled in red and include:

- Main Map
- Options Toolbar
- Main Menu
- User Input and Query Area
- Overview Map

Information about the current view and selections are labeled in blue and include:

- Selected Toolbar Option
- Coordinates of Mouse Pointer
- North Arrow
- Scale Bar
- Scale of Current View

Main Map Features



The **Main Map** component provides the users with an interactive image to view features, query data, and see the spatial relationships of the features on the site.

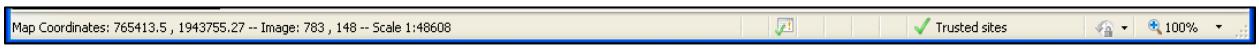
The **Site GIS Viewer** is preconfigured to present data from a variety of sources (CAD drawings, GIS data, sampling points, and images) in a consistent format and projection. The **Site GIS Viewer** within the Paducah site uses the Kentucky State Plane South Zone Coordinate System (North American Datum of 1983). All coordinates and measurements, therefore, are in feet.

At the lower left of the **Main Map** is a *North* arrow. The current viewer provides for *North* to be only at the top of the image. At the lower right is a *Scale Bar* showing the scale of the current view. This bar will change, therefore, as the users zooms in or out.

The **Site GIS Viewer** allows the user to select and view as many of the components (layers) as the user requires. Layers can be turned on or off according to need and one layer can be designated as the active layer. An active layer is the layer of interest that can be queried and spatially buffered for different purposes.

Some features may not be displayed at all scales. Others may be labeled at one scale and not another.

At the bottom of the window, is a status bar that is continuously updated as the cursor is moved around the **Main Map**. This status windows provides the coordinates in both map and image units (feet and pixels, respectively). Also a numeric scale of the current image is displayed.



Note: If the map coordinates, image size and scale do NOT appear in the status bar in the bottom of the window; please do the following on Internet Explorer browsers (versions 7, 8 and 9):

- Open *Internet Explorer*
- Go to http://padgis.latakentucky.com/padgis/
- Click the *Tools* button on the top right hand side of the browser
- Choose *Internet Options* at the bottom of the list.
- Go to the *Security* Tab
- Click on the *Trusted Sites* option and the click the *Sites* button.
- Unclick the "Require server verification (https:) for all sites in this zone" checkbox. Make sure it says http://padgis.latakentucky.com in the "Add this website to the zone:" textbox and then click the *Add* button
- Click *Close*
- Click *OK* in the *Internet Options* window
- Restart *Internet Explorer*

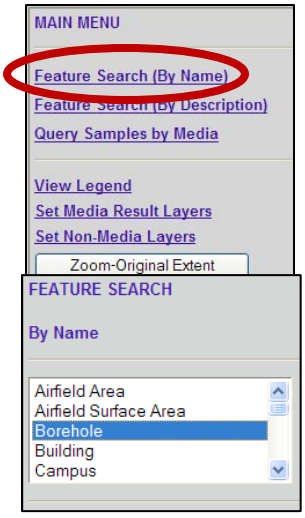
GIS Viewer Main Menu

The **Site GIS Viewer** Main Menu provides the necessary options to allow the selection of map layers to be displayed, analyses to be queried, or to search for features of the site.

The options offered on the Main Menu include:

Feature Search (By Name)	Provides a pick list of features by their name.
Feature Search (By Description)	Provides a pick list of feature by a general descriptive narrative.
Query Samples by Media	Provides a pick list of the various media types and their fractions, detects, etc.
View Legend	Displays legend of the items displayed in the Main Map view.
Set Media Result Layers	Provides a pick list to choose one media sample type for query results.
Set Non-Media Layers	Provides a mechanism to choose the visible map layers, set the order of displaying the visible layers on the map and select one layer as active layer.
Zoom-Original Extent	Zooms to the full extent (default) of the GIS Viewer.

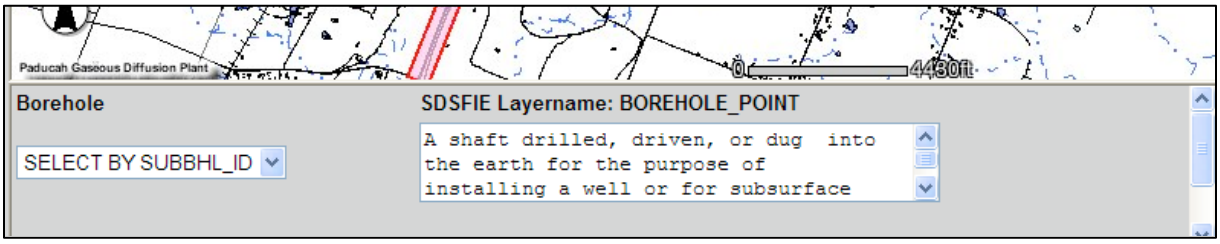
Feature Search (By Name)



Many of the features at the sites of the PPPO have an associated name. These features include buildings, roads, boreholes, and water bodies. Users can search the geodatabase to select named features. To search for a feature by Name, please do the following:

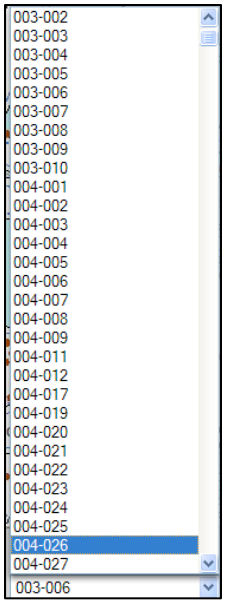
- Click *Feature Search (By Name)* in the *Main Menu*
- A new pick list will appear in the *Main Menu* area showing the available layers that have a name associated with the features.
- From the *Feature Search (By Name)* pick list, select only one (1) layer of interest.

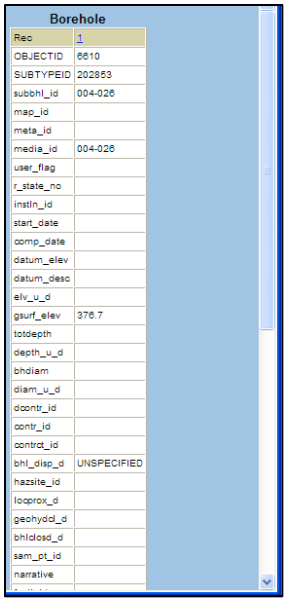
Note: Use the scroll bar to the right of the pick list to see other available features.


Paducah Gaseous Diffusion Plant
0
4430ft
Borehole
SELECT BY SUBBHL_ID
SDSFIE Layername: BOREHOLE_POINT
A shaft drilled, driven, or dug into the earth for the purpose of installing a well or for subsurface

A new option window will appear in the User Input Area below the Main Map.

In the example above, the feature "Borehole" was selected. A short description of the feature is provided in the box on the right. The pull-down list on the left side is populated with the name of every feature in that layer.





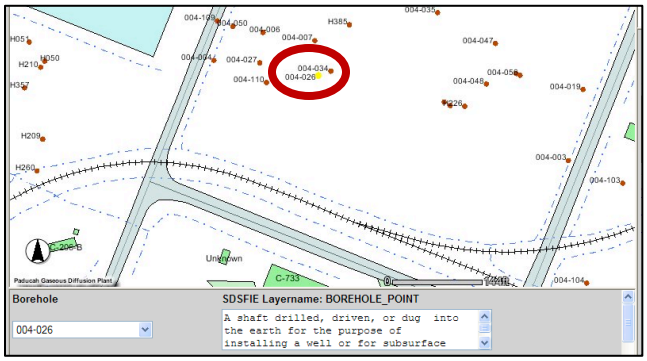
When using the pull-down list, you can only click one name (see far left screen capture).

A new window will open with all of the attributes for the selected named feature (see left screen capture) and the Main Map will zoom and center on this feature. The selected feature will be highlighted in Yellow (see below image circled in red).

Note: Notice that the window with the selected feature's attributes has the feature as the title (in this example: "Borehole") and an underlined number that is linked to the main Map. Clicking this number will return the Main Map to center on and highlight this feature.

Note: You may return to the drop-down menu to select another name. The attribute window will be updated with the new selection, but the first selection is replaced and the Main Map is updated to show the new selection.

Note: Data for the name is obtained from the SUBBHL_ID attribute of the feature.

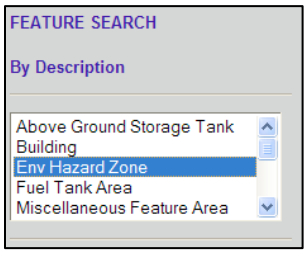


Feature Search (By Description)

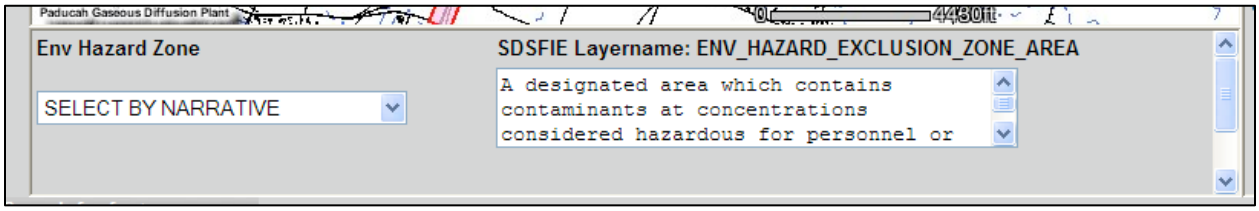
Many of the features at the sites of the PPPO share a common description. These features include buildings, roads, boreholes, and water bodies. Users can search the geodatabase to select features based on the general descriptions assigned to the features.

To search for a feature by its description,

- Click *Feature Search (By Description)* in the *Main Menu*.
- A new pick list will appear in the *Main Menu* area showing the available features having descriptions stored in the geodatabase.
- Select only one layer of interest.

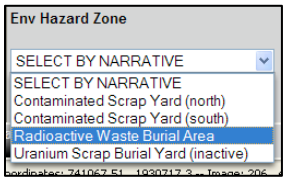


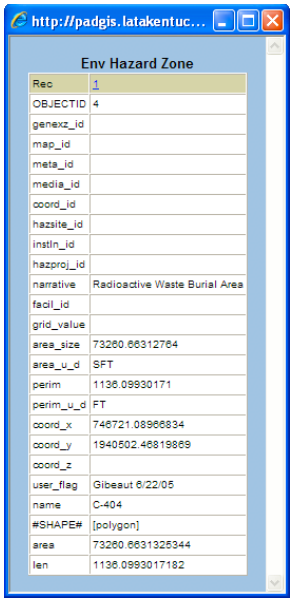
Note: Use the scroll bar to the right of the pick list to see other available features.


Paducah Gaseous Diffusion Plant
Env Hazard Zone
SELECT BY NARRATIVE
SDSFIE Layername: ENV_HAZARD_EXCLUSION_ZONE_AREA
A designated area which contains contaminants at concentrations considered hazardous for personnel or

A new option window will appear in the User Input Area below the Main Map.

In this example, the feature "Env Hazard Zone" was selected. A description is provided in the box on the right. The pull-down list on the left side is populated with the name of every feature in that layer.





Using the drop-down menu, a list of all possible descriptions for the selected feature is displayed.

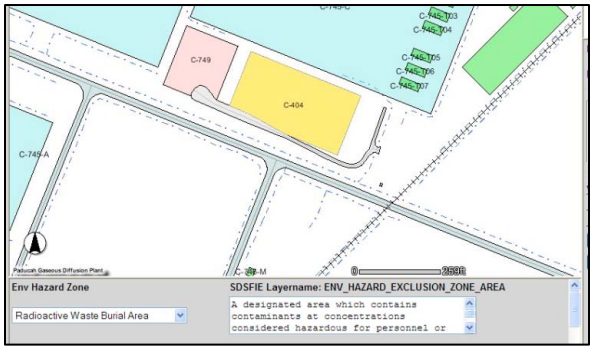
Click on only one description.

A new window will open with attributes for all the features matching the selected description. Use the Scroll bar on the right of this window to see the other features.

Note: Notice that the window with the selected feature's attributes has the feature as the title (in this example: "Env Hazard Zone") and an underlined number that is linked to the Main Map. Clicking this number center, zoom in, and highlight this feature on the Main Map.

Note: You may return to the drop-down menu to select another name. The attribute window will be updated with the new selection, but the first selection is replaced.

Note: Data for the description is obtained from the Narrative attribute of the feature.

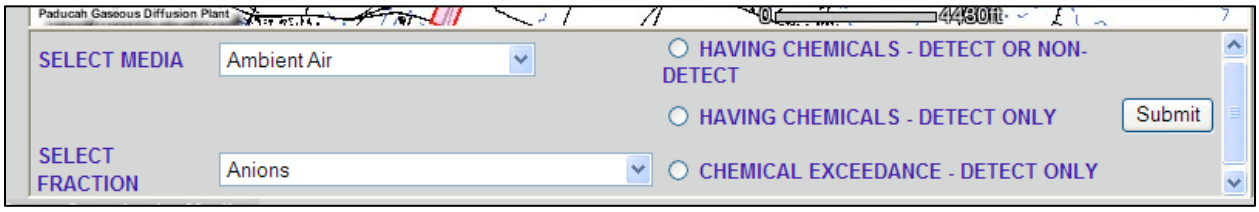


Query Samples by Media

Users can search for analytical data stored in PEGASIS from the **Site GIS Viewer** using a number of different tools. The Query Samples by Media option of the Main Menu provides a simple query interface to search for and display sample locations and their associated results of analyses.

To search for a feature by Media,

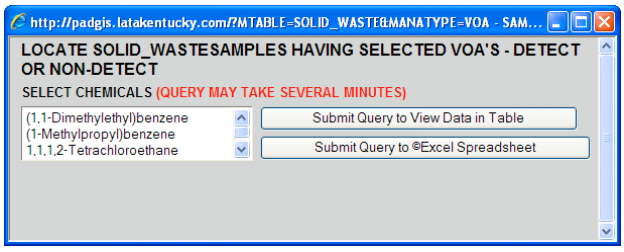
- Click *Query Samples by Media* in the *Main Menu*.



A new option window will appear in the User Input Area below the Main Map.

This dialog box has 3 user input options: *Select Media, Select Fraction*, and a choice of one radial button for either *Having Chemicals – Detect or Non_Detect*, or *Having Chemicals – Detect Only*, or *Chemical Exceedance – Detect Only*.

- Use the *Select Media* drop-down list to display a list of all possible media.
- Click on only one media type.
- Use the *Select Fraction* drop-down list to display a list of all possible fractions.
- Click on only one fraction type.
- Next, select one of the 3 chemical options.
- Finally, click the *Submit* button to start the search.


http://padgis.latakentucky.com/?MTABLE=SOLID_WASTE&MANATYPE=VOA - SAM...
LOCATE SOLID_WASTESAMPLES HAVING SELECTED VOA'S - DETECT OR NON-DETECT
SELECT CHEMICALS (QUERY MAY TAKE SEVERAL MINUTES)
(1,1-Dimethylethyl)benzene
(1-Methylpropyl)benzene
1,1,1,2-Tetrachloroethane
Submit Query to View Data in Table
Submit Query to ©Excel Spreadsheet

A new window will open with the results of the query.

From the left list box select the list of chemicals of interest. Multiple chemicals may be selected by simply using the *Shift* or *Control* key while selecting from the list. Choose how the data is to be displayed or saved as a spreadsheet file.

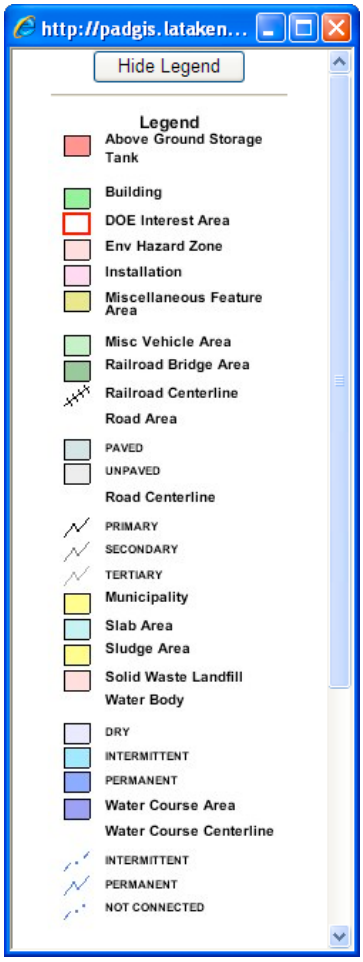
If the query generated by the *Select Media* and *Select Fraction* options has no results, a window such as the example on the left will be displayed.

View Legend

The **Site GIS Viewer** legend, by default, is not visible. To view the legend of the current Map Display Area,

- Click *View Legend* in the *Main Menu*.

Features are listed in the order they are displayed on the map; from the lowest layers at the bottom to the top-most layers shown at the top of the legend.



Colors and symbols are automatically set by the **Site GIS Viewer** and cannot be changed.

Note: The legend will change as different features are selected or dropped from the map.

Note: Clicking the red "X" in the top right corner to close the legend window will only temporarily remove it from the screen. It will continue to pop up each time you access the data. To remove the legend permanently until you choose to view it again, click the *Hide Legend* button to make the legend disappear.

Set Media Result Layers

Setting the Media Results Layer determines which sample media type in PEGASIS will be targeted in queries from the **Site GIS Viewer**. To set the Media Results Layer,

- Click *Set Media Result Layers* option in the *Main Menu*.

A new window will open showing all of the available *Media Sample Result Layers* currently in PEGASIS.

- Select one media by clicking the radio button to the left of the media type.

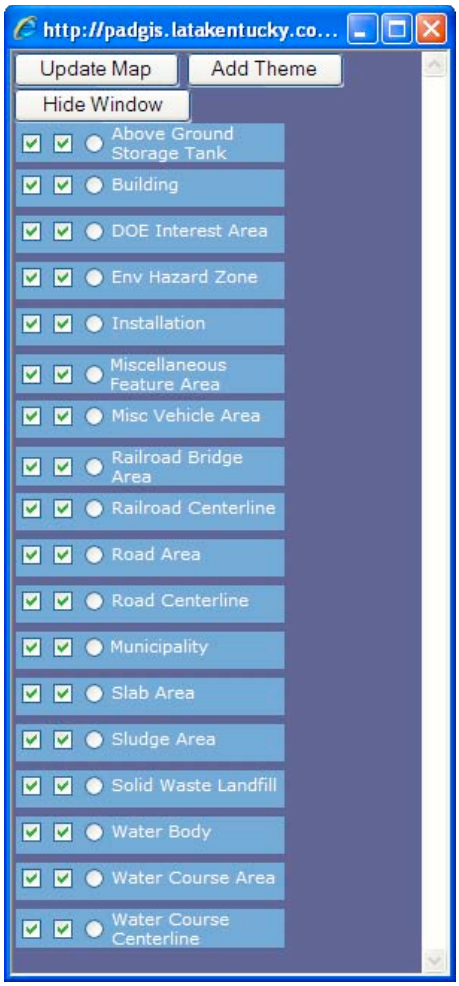
Note: This media list may change as new media types are added to PEGASIS.

Set Non-Media Layers

Selecting the Set Non-Media Layers option provides a list of layers to display in the **Site GIS Viewer** Main Map. It also allows the user to select the specific layer as the active layer for subsequent queries when using the *Identify*, *Select by Buffer*, *Querying*, and *Hyperlink* options.

To set the Non-Media Layers,

- Click *Set Non-Media Layers* option in the *Main Menu*.



A new window will show all current layers being displayed on the Main Map. Each layer is contained within a movable box with two checkboxes and a radial button.

- The 1st checkbox enables the layer to be visible;
- The 2nd is unchecked when the layer is to be removed completely from the list;
- The radial button is selected to make the layer the active layer.

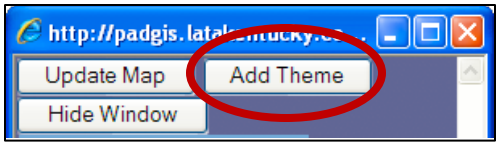
Users can add additional layers by clicking on the *Add Theme* button at the top of the window. New layers are added to the top of the list. Click the *Update Map* button to update the Main Map to show the changes you may have made by adding or removing layers.

The position of the layers in this list determines how they are displayed in the Main Map. The top of the list is the last layer to be displayed. Users can rearrange these boxes in any order they need.

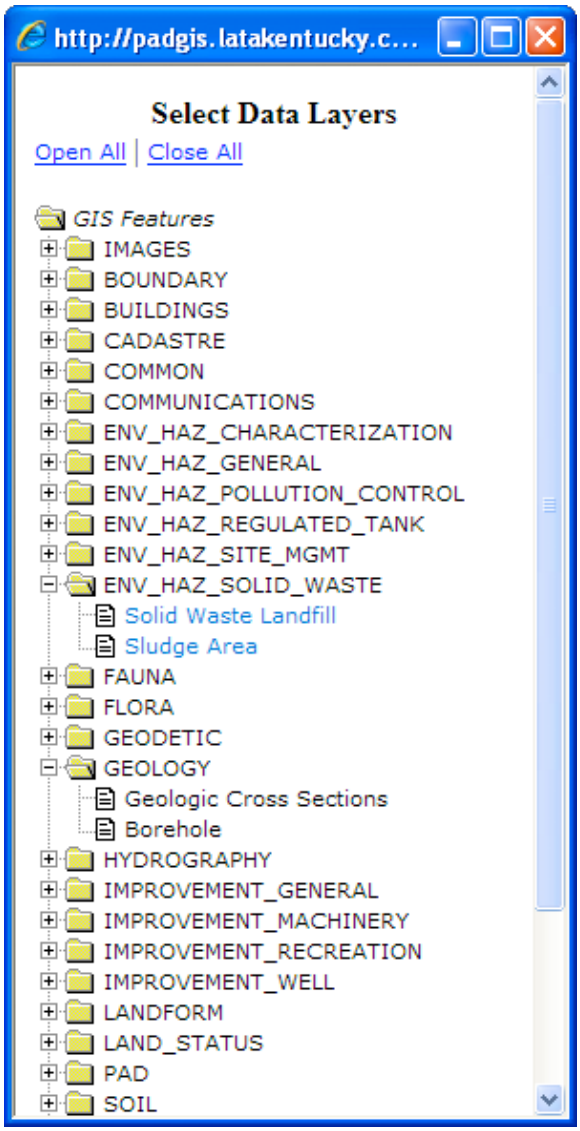
Note: Some layers will completely cover layers that are lower in the list. For example, adding an aerial photo to the top of the list will completely mask all of the features from the other layers. It is upon the user, therefore, to be sure that the layers are arranged in such a way that all of the features of the lower layers are visible on the Main Map.

Note: This layer list may change as new layers types are added to the **Site GIS viewer**.

Adding New Themes as Layers



Adding a theme to the Non-Media Layers provides the **Site GIS Viewer** with additional layers (theme) to display in the Main Map.



To add additional themes to the Non-Media Layers,

- Click the *Add Theme* button in the *Non-media Layers* window.

A new window will open showing all themes currently available to the **Site GIS Viewer**. The themes are grouped according to feature class. These feature classes can be expanded to show the available data layers within that class.

To select a data layer to be added to the Non-Media Layers:

- Click on the little icon to the left of the desired data layer.

- Continue to add as many layers as needed then return to the Non-Media Layers window.

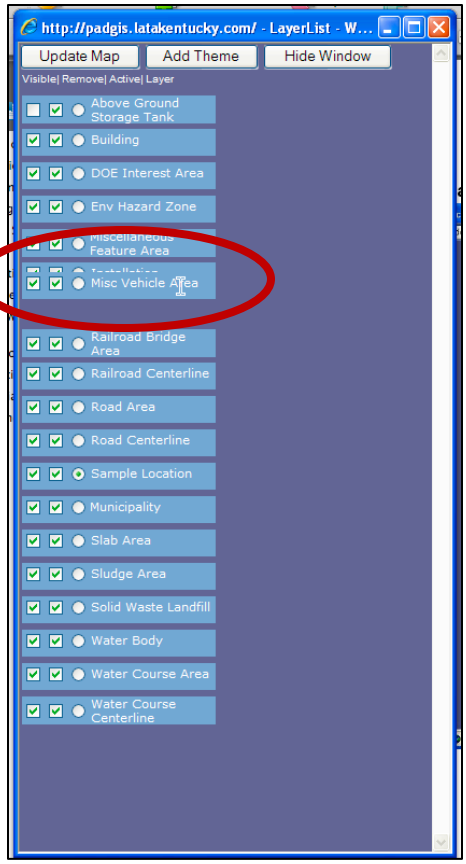
New layers are added to the top of the list. Click the *Update Map* button to update the Main Map with the new layer(s).

The position of the layers in this list determines how they are displayed in the Main Map. The top of the list is the last layer to be displayed. Users can rearrange these boxes in any order they need.

Note: Some layers will completely cover layers that are lower in the list. For example, adding an aerial photo to the top of the list will completely mask all of the features from the other layers. It is upon the user, therefore, to be sure that the layers are arranged in such a way that all of the features of the lower layers are visible on the Main Map.

Note: This layer list may change as new layers types are added to the Site GIS viewer.

Rearranging Main Map Layers



The position of the layers in this list determines how they are displayed in the Main Map. The top of the list is the last layer to be displayed.

Users can rearrange these boxes in any order they need. To move layers to a new position:

- Left-click and hold the click on the layer to be moved.
- Move the layer to the desired position on the list and release the click.

The layer will now appear in its new position when the Main Map is updated.

Note: Some layers will completely cover layers that are lower in the list. For example, adding an aerial photo to the top of the list will completely mask all of the features from the other layers. It is upon the user, therefore, to be sure that the layers are arranged in such a way that all of the features of the lower layers are visible on the Main Map.

GIS Viewer Toolbar

Zoom In		Zooms in to the area of the map that you click or drag a box around.
Zoom Out		Zooms out from the area of the map that you click or drag a box around.
Zoom to Full Extent		Zooms to full extent of map.
Zoom to Active Layer		Zooms to full extent of the active layer.
Zoom to Previous Extent		Zooms to the previous extent.
Pan		Pans the display in the direction that you drag the mouse pointer.
Hyperlink		Links between a feature or element on the map to an external document (limited availability)
Identify		Displays attribute data for the feature that is clicked.
Query		Searches for features based on a query expression.
Measure		Measures distances on map.
Buffer		Selects the features of one layer that are within the specified buffer distance of selected features of another layer.
Select by Rectangle		Selects the group of features contained by or in contact with a rectangle you draw on the map.
Select Query by Polygon		Creates a query to find analytical sample results for the group of features contained by or in contact with a polygon.
Select Query by Circle		Creates a query to find analytical sample results for the group of features contained by or in contact with a circle.
Select Query by Rectangle		Creates a query to find analytical sample results for the group of features contained by or in contact with a polygon.
Select Query by Buffer		Creates a query to find analytical sample results for the group of features contained by or in contact within a buffered area.
Clear Selection		Clears the selected set of features.
Print		Prints the map to your default printer.
Extract Feature Layers		Downloads Feature Layers and Imagery as ESRI Shape file.

Note: The currently selected toolbar button will have a red square around the graphic as seen on the Zoom In button above.

Zoom Tools

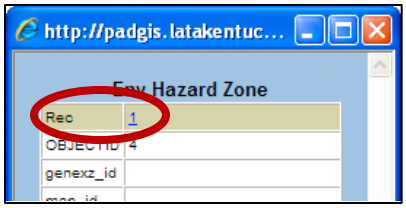
The **Site GIS Viewer** Toolbar offers multiple options to help users zoom to features on the map.

Five options are available on the **Site GIS Viewer** toolbar and other options are inherent in the functionality of the viewer and as a result of search and selection operations.

Zoom In		Zooms in to the area of the map that you click or drag a box around.
Zoom Out		Zooms out from the area of the map that you click or drag a box around.
Zoom to Full Extent		Zooms to full extent of map.
Zoom to Active Layer		Zooms to full extent of the active layer.
Zoom to Previous Extent		Zooms to the previous extent.

The Main Map will automatically zoom to a specific feature as a result of a media or non-media *Main Menu* queries (such as buildings, boreholes, SMU, etc.).

Users can also zoom to specific areas or features on the map by clicking on the record (REC) number found on the results of a query.



Notice the underlined Rec number on this query results window. Clicking this link will zoom the map to the referenced feature. This feature will also be highlighted on the Main Map for easy identification.

Zoom In

The Zoom In function of the **Site GIS Viewer** Toolbar zooms into the area of the Main Map that you click or drag a box around.

Users may either:

- Use a single click on the area to be zoomed.

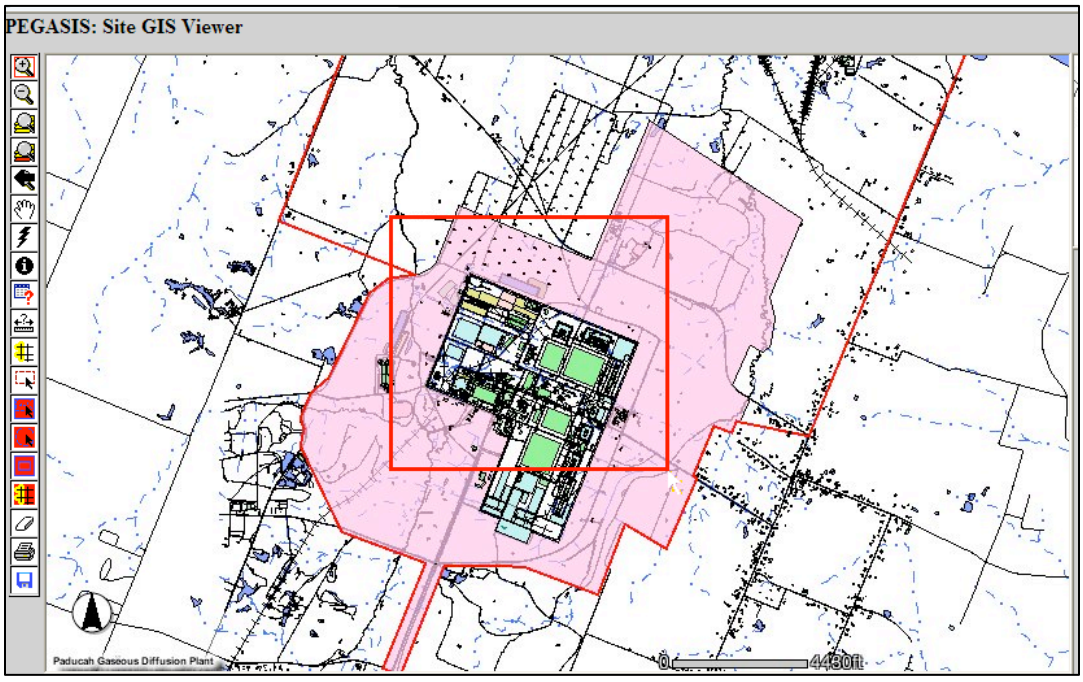
The Main Map will zoom in a predefined amount and the map centered on the point that was clicked.

OR

draw a box around the area of interest by

- Left-clicking on one corner of the box and hold the left button.
- Drag a red box to fit the area of interest as shown on the image below.
- Release the left-click.

The Main Map will fit the contents of the drawn box into the full window.



Zoom Out

The Zoom Out of the **Site GIS Viewer** Toolbar zooms out from the area of the Main Map that you click or drag a box around.

Users may either:

- Use a single click on the area to be zoomed out.

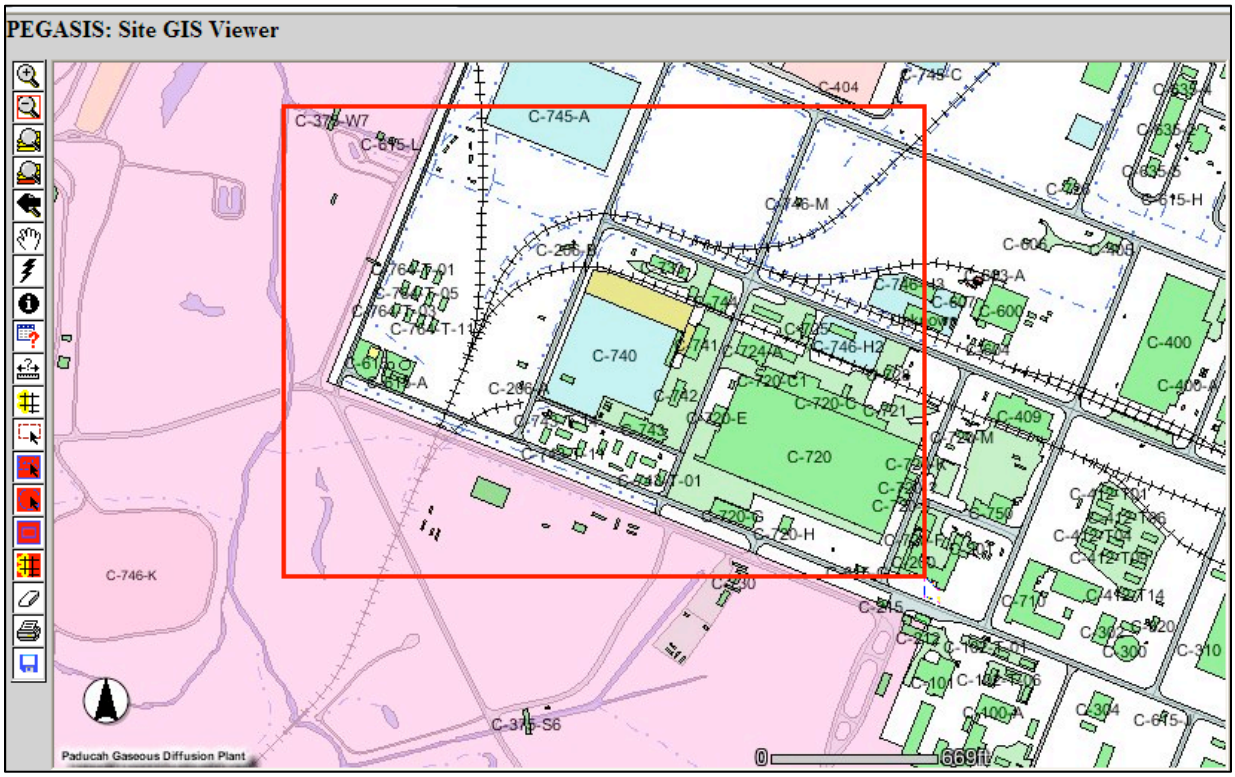
The Main Map will zoom out a predefined amount and the map centered on the point that was clicked.

OR

draw a box around the area of interest by

- Left-clicking on one corner of the box and hold the left button.
- Drag a red box to fit the area of interest as shown on the image below.
- Release the left-click.

The Main Map will fit the contents of the drawn box into the full window. Beware of drawing too small of a box!



Zoom to Full Extent

The Zoom to Full Extent of the **Site GIS Viewer** Toolbar zooms to the full extent of the map.

This option provides the same functionality as the Zoom-Original Extent button on the Main Menu.

Zoom to Active Layer

The Zoom to Active Layer of the **Site GIS Viewer** Toolbar zooms to the full extent of the active layer which was previously selected using either the Set Media Results Layers or Set Non-Media Layers options.

Depending on the active layer, the map will show only the area that fully encloses the features of the active layer.

Zoom to Last Extent

The Zoom to Last Extent of the **Site GIS Viewer** Toolbar will toggle between the current view and the last viewed extent.

It will not go back beyond the last view. In other words, the current view immediately becomes the "last" view.

Pan Tool

There are a number of ways to move around the Main Map, depending on need: *Pan tool*, *using the Overview Map*, and *referencing record numbers returned in query operations*.

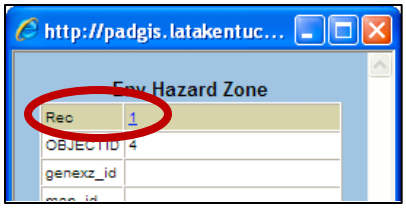
The Pan tool in the **Site GIS Viewer** Toolbox provides a simple method to move the Main Map view to new areas.

To use the Pan tool,

- Click on the *Pan Tool* icon in the **Site GIS Viewer** Toolbox.
- Left-click and hold the mouse as you move in the direction you wish to view.
- Release the left-click.
- The Main Map will automatically refresh with a new view centered over the point where the mouse pointer stopped. The map view will be at the same scale as the previous view.

A second method for moving around the Main Map utilizes the Overview Map.

- On the *Overview Map*, point the mouse pointer and left-click the new area of interest.
- The Main Map will automatically refresh with a new view centered over the point where the pointer stopped on the *Overview Map*.
- The map view will be at the same scale as the previous view and the red box in the *Overview Map* will also be updated with the new position.



Many records may be returned as a result of a query.

- Clicking on the underlined record (REC) number will automatically refresh the Main Map with a new view centered over the feature represented by that record number.

Hyperlink Tool

The Hyperlink Tool of the **Site GIS Viewer** Toolbox provides a method to link non-textual data with features on the Main Map. Non-textual data may be photos, handwritten notes, reports, or other types of documents that are not easily or completely copied into PEGASIS. Sometimes these non-textual documents are invaluable to researchers and contractors.

To use the Hyperlink Tool of the **Site GIS Viewer** Toolbox,

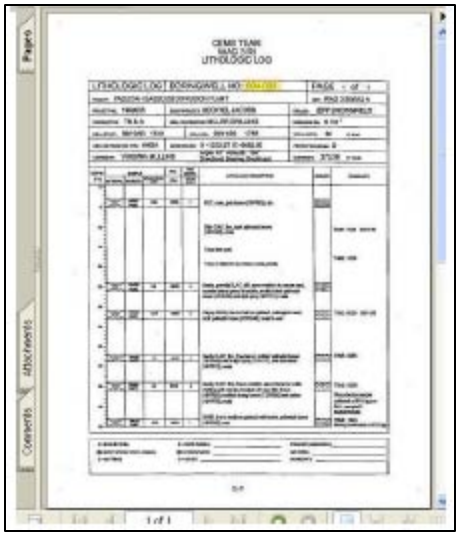
- Select one layer to be the active layer.
- Click the *Hyperlink Tool* on the **Site GIS Viewer** Toolbox.

A separate window will open displaying the hyperlinked document.

In the example on the left, the Borehole layer is hyperlinked to the driller's logs.

Note: If the selected layer does not have any hyperlinks, a pop-up message will be displayed.

Tip: Once you have selected a layer with hyperlinks, you can find out quickly what other layers do and do not have hyperlinks.



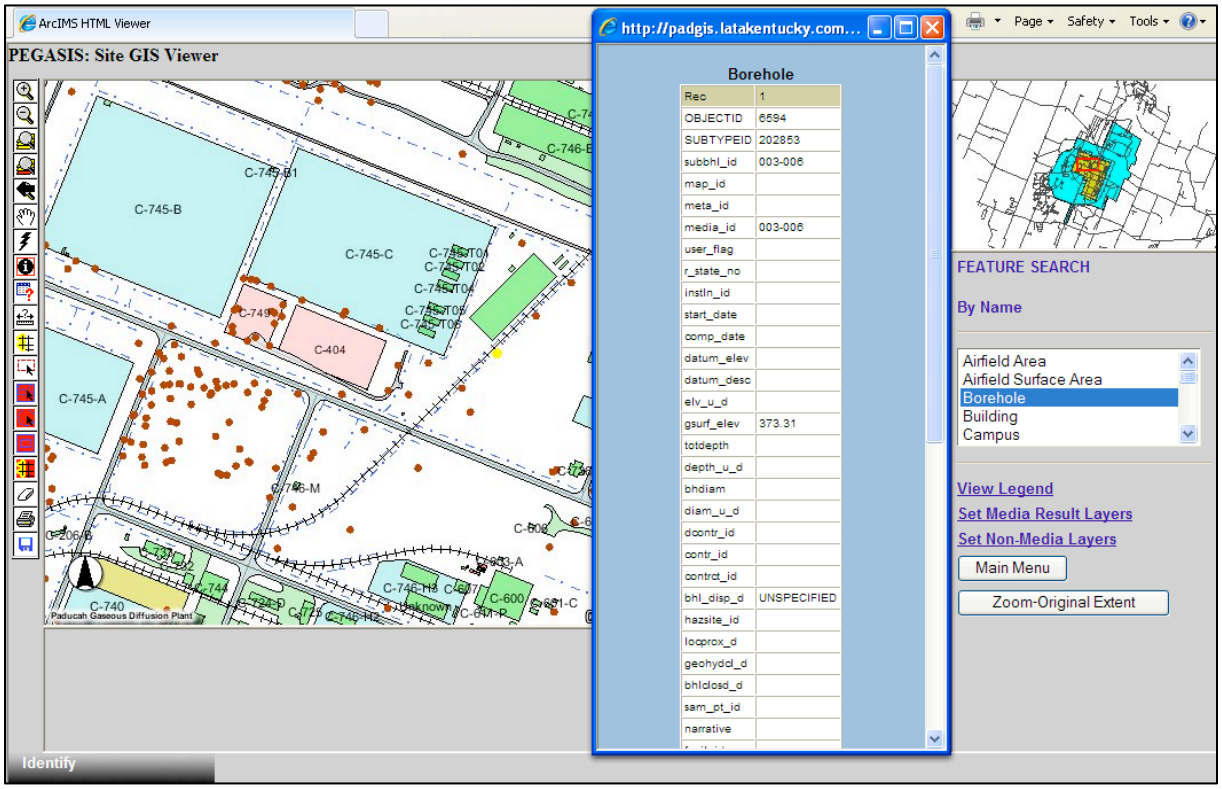
- Open the Set Non-Media Layers window by clicking the *Set Non-Media Layers* option in the Main Menu.
- Click on the radial button to make the layer the active layer. If the layer does not have a hyperlink associated with it, a pop-up window will be displayed.

Identify Tool

The Identify Tool option in the **Site GIS Viewer** Toolbox, displays attribute data for a selected feature in the active layer.

To use the Identify Tool option in the **Site GIS Viewer** Toolbox,

- Make sure the correct layer containing the feature of interest is selected as the active layer.
- Select the *Identify Tool* option in the **Site GIS Viewer** Toolbox.
- Click on the feature of interest.
- A new window will display the attribute data for the selected feature.

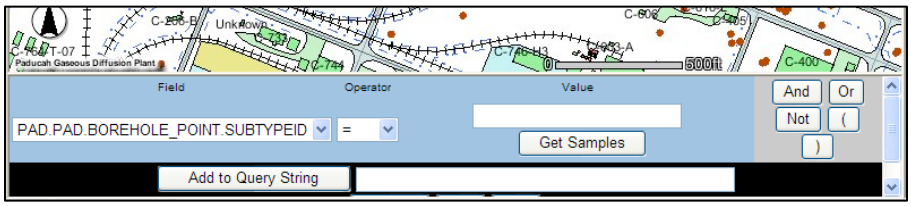


Query Tool

The Query Builder tool in the **Site GIS Viewer** Toolbox enables users to build the necessary statements to search the GIS attribute data of the active layer. The Query Builder extends the usefulness of the **Site GIS Viewer** by allowing users to select features using their own criteria.

To use the Query Builder tool in the **Site GIS Viewer** Toolbox,

- Be sure the layer containing the features you want to query is selected as the active layer.
- Click the *Query Builder* tool in the **Site GIS Viewer** Toolbox.
- A new user input dialog box opens below the Main Map.



The left side pull-down list has a list of all of the attributes (fields) available for the active layer.

- Select the attribute you want to search.

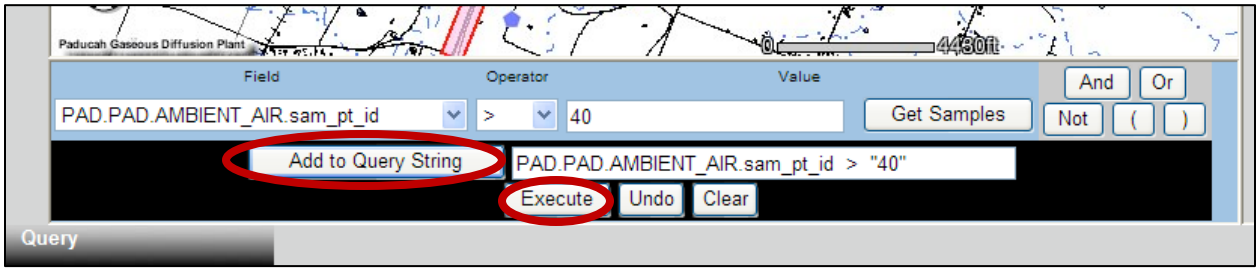
The next pull down menu is a list of possible logical operators. The available logical operators are shown in the table below.

=	Attribute *equals* the value
<	Attribute is *less than* the value
>	Attribute is *greater than* the value
<=	Attribute is *less than or equals* the value
>=	Attribute is *greater than or equals* the value
Like	Attribute is *similar to* the value

The 3rd box inputs the value that meets your need. You can get a sample of values for the first 50 records of the active layer.

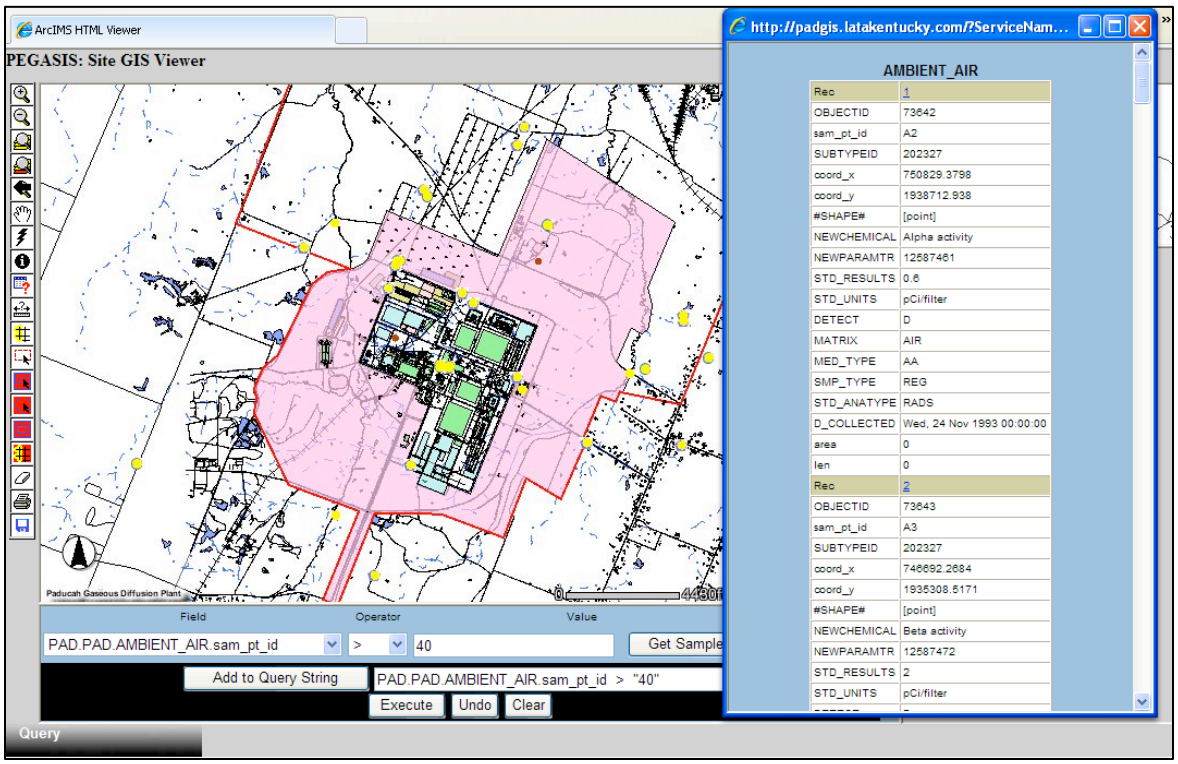
- Enter a value to search against your logical operator.

The following example searches for all sample locations in AMBIENT_AIR (the active layer) having the SAM_PT_ID attribute value greater than 40.



To execute your query,

- Click the *Add to Query String* button to add the query string to the command line.
- Click the *Execute* button to execute the query.



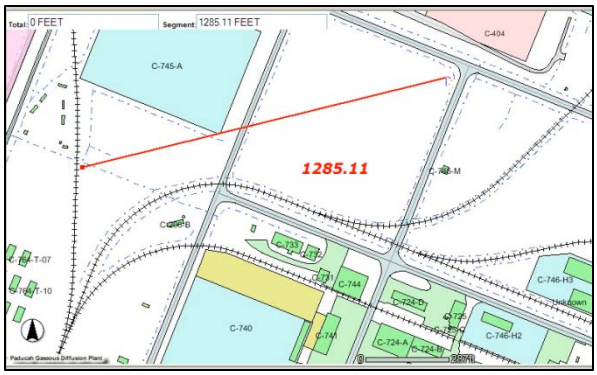
The results of the query are displayed on the Main Map. Features whose attributes match the request criteria are highlighted and a separate window will open with a table showing all of the attributes of the selected features.

The Query Builder tool in the **Site GIS Viewer** Toolbox allows users to build complex query statements by using additional Logical operators (AND, OR, NOT) plus using parentheses to determine the order of selecting attribute values.

Measure Tool

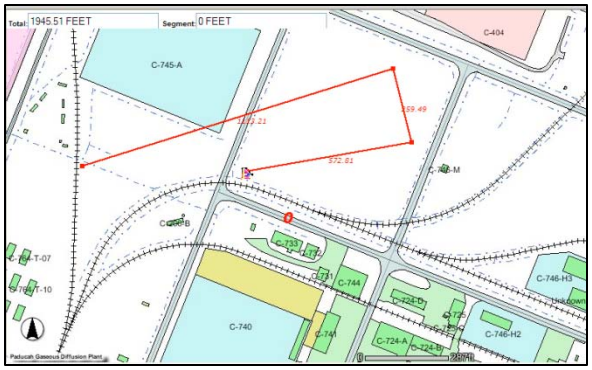
The Measure Tool option on the **Site GIS Viewer** Toolbar allows users to measure lengths between two (2) or more points on the Main Map.

- Zoom or move to the area of interest on the Main Map.
- Click on the *Measure Tool* icon in the **Site GIS Viewer** Toolbox.
- Left-click on the starting point.
- Move the cursor to another location.



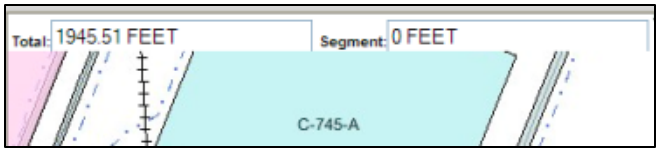
As you move the cursor, a red line will appear as will red numbers to indicate the length.

Note: Length is always measured in feet.



To obtain a traverse measurement,

- Single click at intermediate points along the traverse.
- Each click will generate a red line between the last point clicked and the current point. A red number will also be shown indicating the length of that segment.



Two boxes are displayed in the upper left of the Main Map when using the Measure tool. The left box is the total length of all segments measured. The right box is the length of the current segment.

Note: Distance is always measured in feet.

Double clicking clears the Measure tool and resets all measurements to zero.

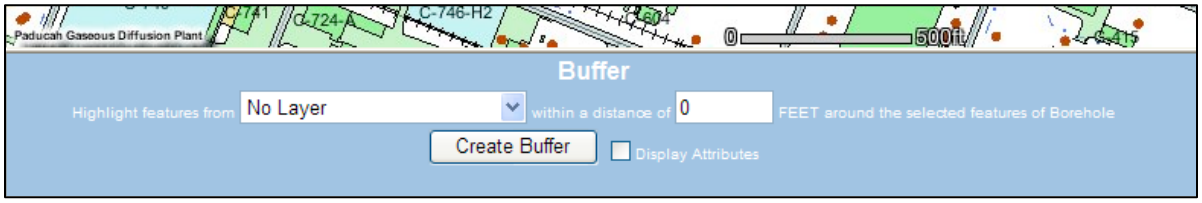
Buffer Tool

The Buffer option on the **Site GIS Viewer** Toolbar provides an easy to use mechanism to select and review features within a given distance around a selected feature.

To use the Buffer option,

- Set the active layer containing the feature to use as the center of the buffer.
- Click the *Buffer* tool on the **Site GIS Viewer** Toolbar.
- A drop-down list of available features will be displayed in the User Input area below the Main Map.

This will open a new user input box below the Main Map.



- Using the pull-down list, select the type of feature to be selected by the buffer query.

Note: Only one layer can be selected.

- Type a buffer distance to be searched.

Note: Distance is always in feet.

- You can request an attribute table for the buffered feature by checking the display attributes check box.
- Click Create Buffer button.

In this example, any Building features within 500 feet of the currently selected feature will be selected. The extent of the buffered area is shown as a shaded outline on the Main Map, as shown in the image to the left.

Select by Rectangle Tool

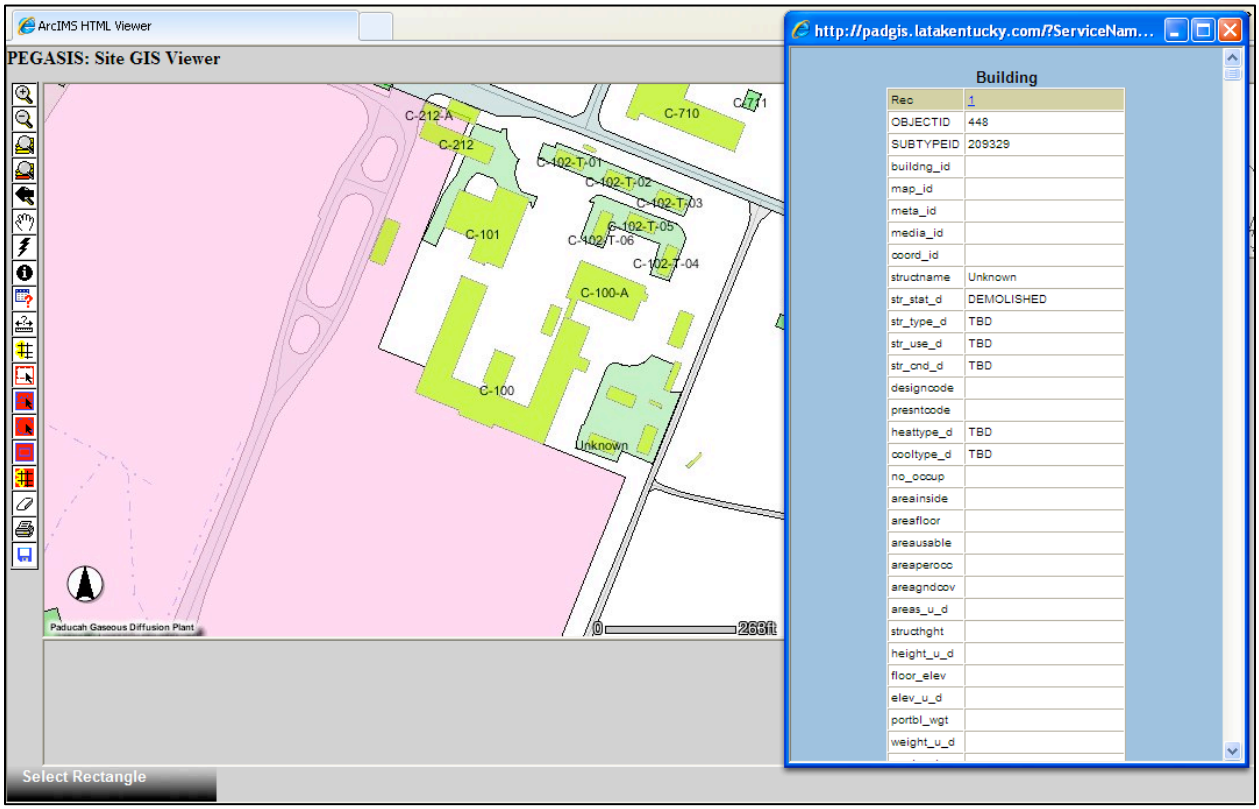
The Select Rectangle tool of the **Site GIS Viewer** Toolbar allows features of the active layer to be selected within a user defined rectangle.

To select features using a rectangle,

- Be sure one the features to be selected is the active layer.
- Click the *Select Rectangle* tool from the **Site GIS Viewer** Toolbar.
- Left-click and hold on one corner of the area to be selected.
- Move the cursor to the opposite corner of the area to be selected.
- Release the left-click.

Note: Only features that fall completely within the rectangle will be selected.

The Main Map will be updated to display the selected features within the rectangle. A new window will also be displayed with the attributes of the selected features.



Select Query by Polygon Tool

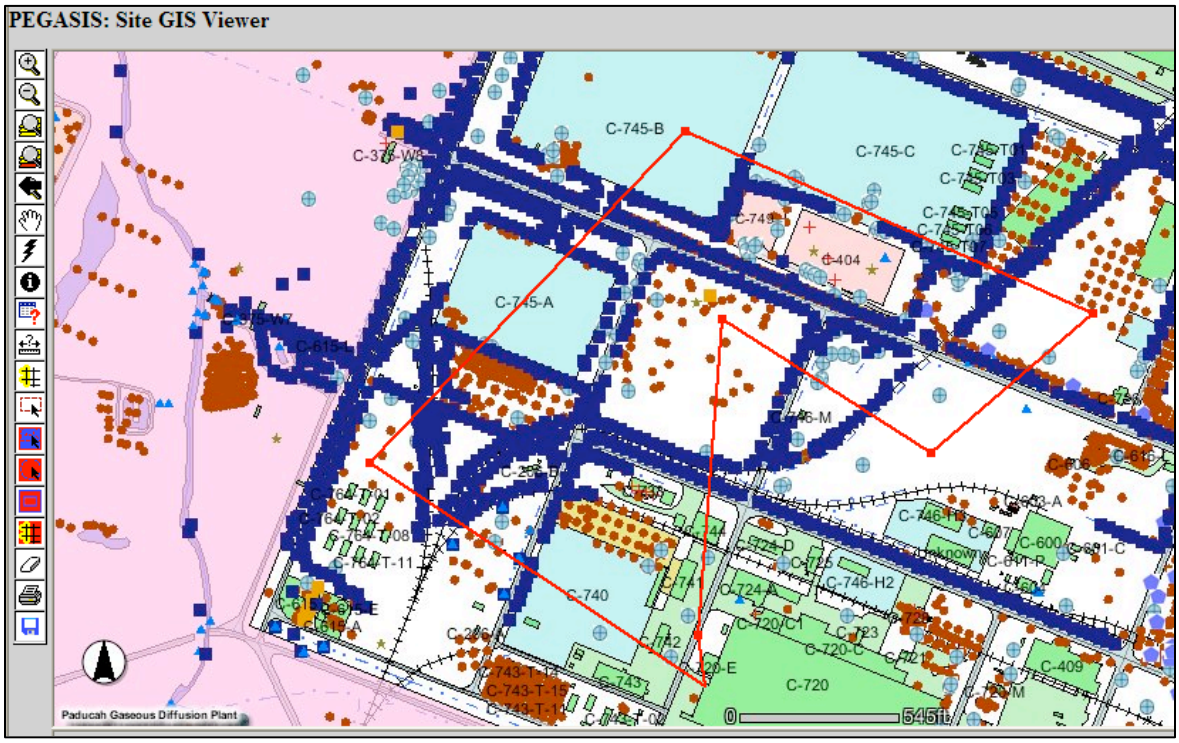
The Select Query by Polygon tool of the **Site GIS Viewer** Toolbar provides a method to select analytical results from *Sample Locations* within a user-defined polygon.

To select locations within a Polygon,

- Be sure *Sample Locations* is the active layer.
- Click the *Select Query by Polygon* tool from the **Site GIS Viewer** Toolbar.
- Left-click and hold on one corner of the area to be selected.
- Move the cursor and click on points to define the shape of the Polygon.
- Double click on the last point of the Polygon.

Note: Only features that fall completely within the Polygon will be selected.

The Main Map will be updated to display the selected features within the polygon. A new window will allow users to request the analyses to be displayed.



Select Query by Circle Tool

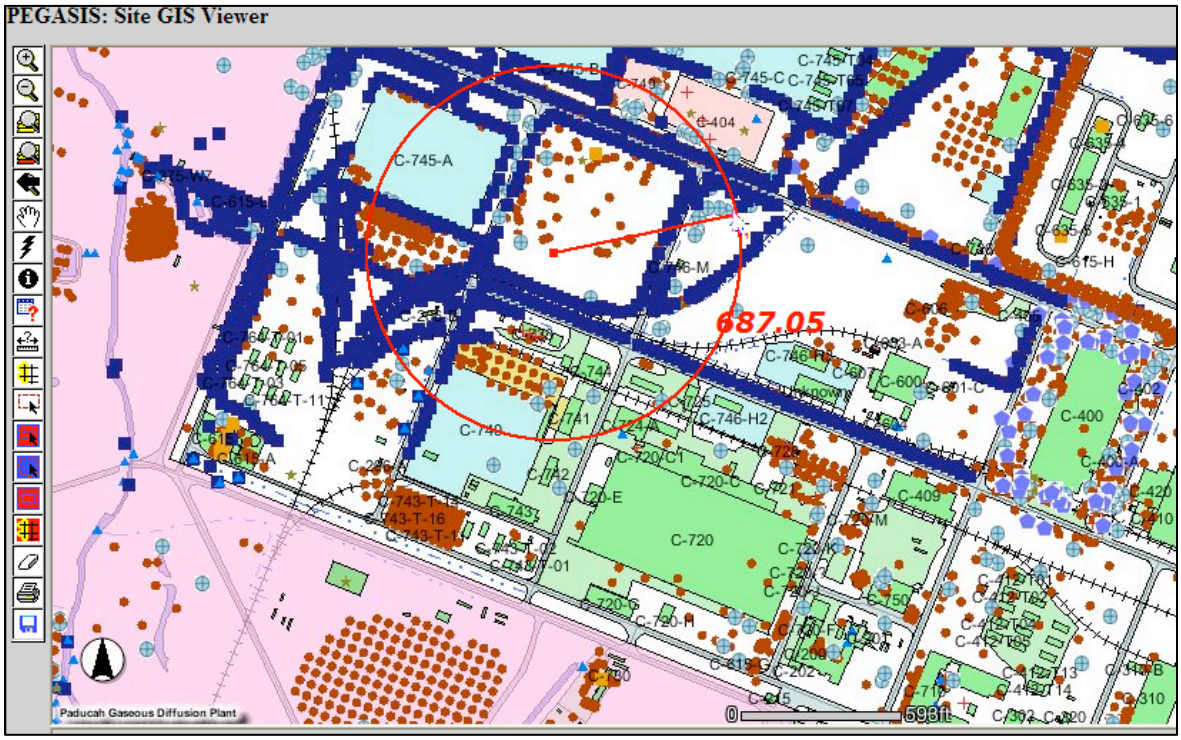
The Select Query by Circle tool of the **Site GIS Viewer** Toolbar provides a method to select analytical results from *Sample Locations* within a user-defined circle.

To select locations within a Circle,

- Be sure *Sample Locations* is the active layer.
- Click the *Select Query by Circle* tool from the **Site GIS Viewer** Toolbar.
- Left-click and hold on one corner of the area to be selected.
- Move the cursor and click the desired radius of the circle.
- Release the left-click.

Note: Only features that fall completely within the Circle will be selected.

The Main Map will be updated to display the selected features within the circle. A new window will allow users to request the analyses to be displayed.



Select Query by Rectangle Tool

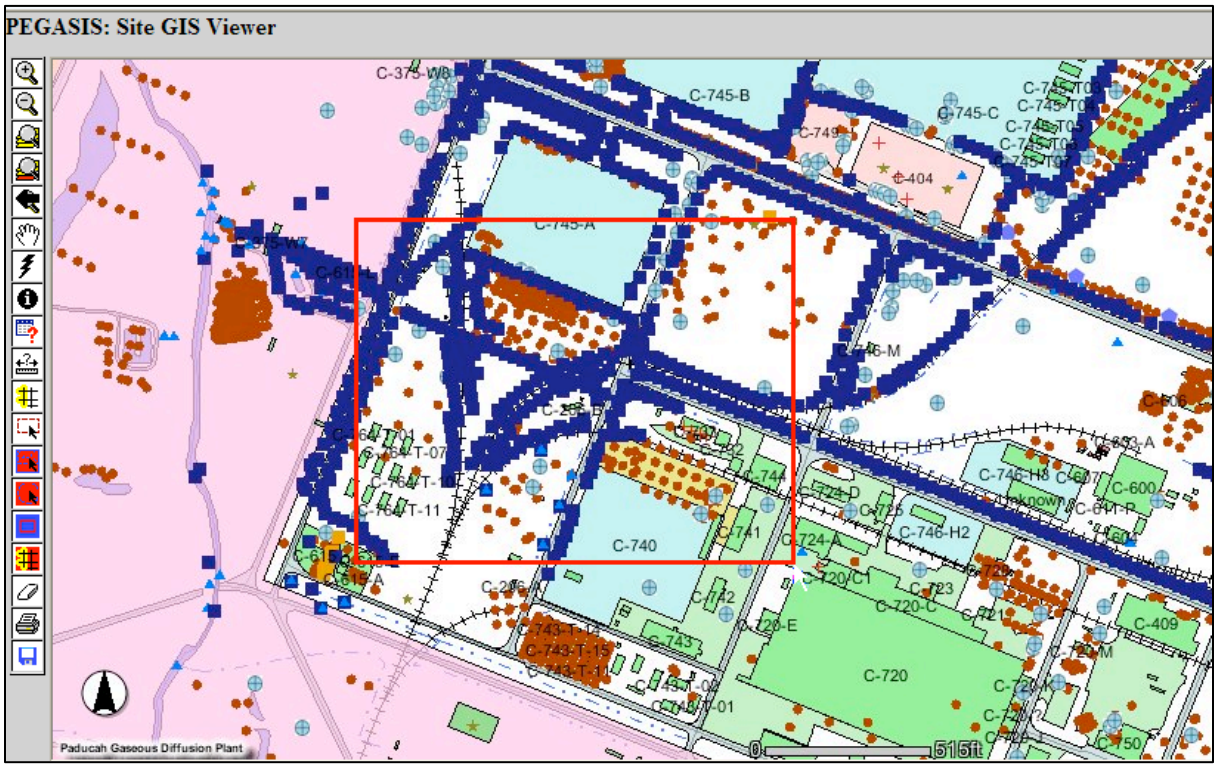
The Select Query by Rectangle tool of the **Site GIS Viewer** Toolbar provides a method to select analytical results from *Sample Locations* within a user-defined rectangle.

To select locations within a Rectangle,

- Be sure *Sample Locations* is the active layer.
- Click the *Select Query by Rectangle* tool from the **Site GIS Viewer** Toolbar.
- Left-click and hold on one corner of the area to be selected.
- Move the cursor and click the opposite corner of the rectangle.
- Release the left-click.

Note: Only features that fall completely within the Rectangle will be selected.

The Main Map will be updated to display the selected features within the rectangle. A new window will allow users to request the analyses to be displayed.



Select Query by Buffer Tool

The Select Query by Buffer tool of the **Site GIS Viewer** Toolbar provides a method to select analytical results from *Sample Locations* within a user-defined buffer.

To select locations within a Buffer,

- Be sure *Sample Locations* is the active layer.
- Click the *Select Query by Buffer* tool from the **Site GIS Viewer** Toolbar.

This will open a new user input box below the Main Map.

- Using the pull-down list in the *User Input Area* below the Main Map, select the type of features to be highlighted by the buffer query.

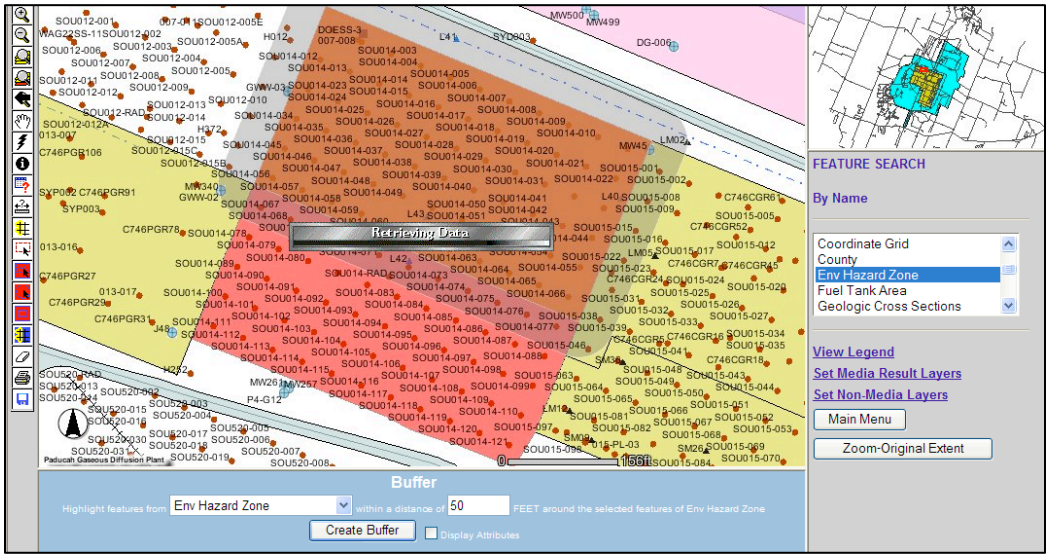
Note: Only one layer can be selected.

- Type a buffer distance to be searched.

Note: Distance is always in feet.

- You can request an attribute table for the buffered features by checking the *Display Attributes* check box.
- Click *Create Buffer* button.
- The Main Map will be updated to display the selected features within the Buffer.

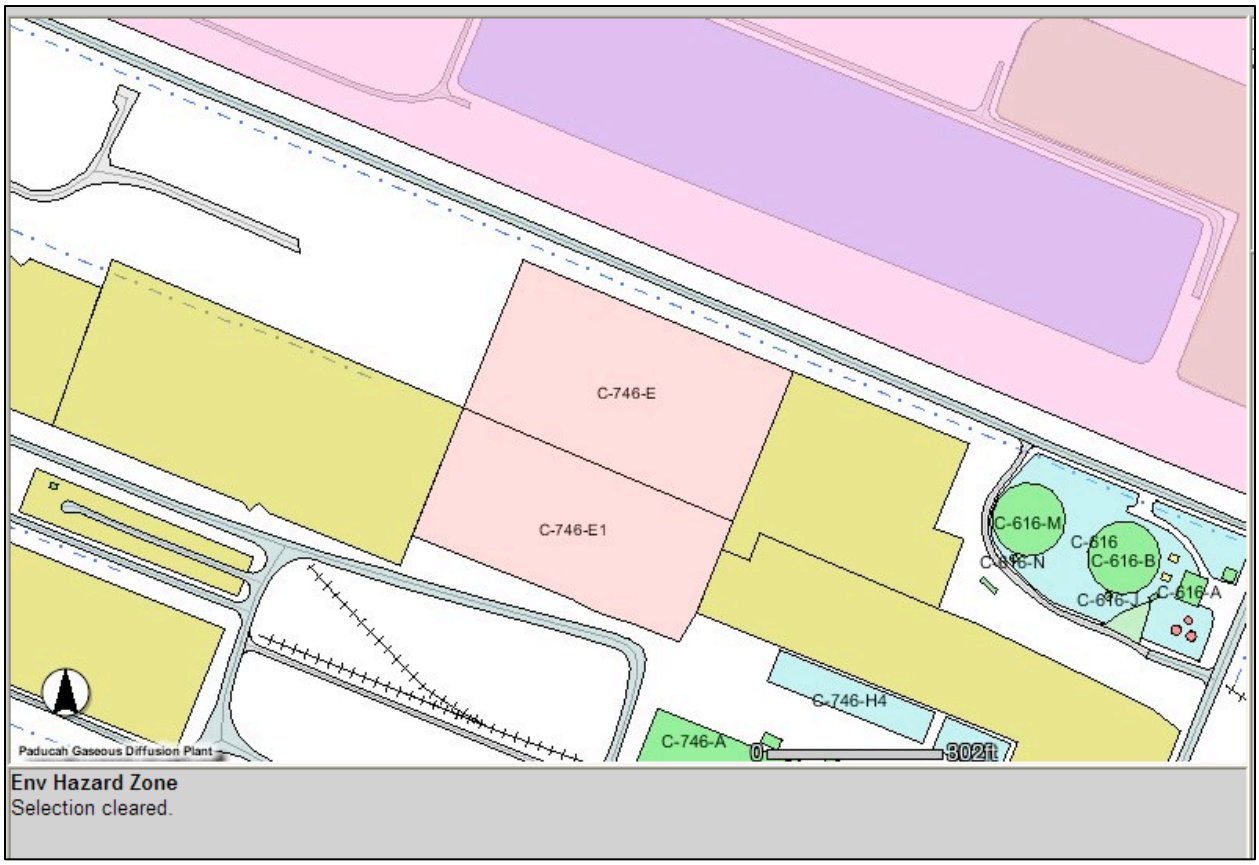
In this example below, all *Sample Locations* within 50 feet of the *Env Hazard Zone* are highlighted in a charcoal-gray color.



Clear Selection Tool

The Clear Selection option of the **Site GIS Viewer** Toolbox is used to clear all of the selected features of the active layer and update the Main Map. The current zoom remains the same.

In this example below, all of the selected Env Hazard Zone features have been cleared.



Print Tool

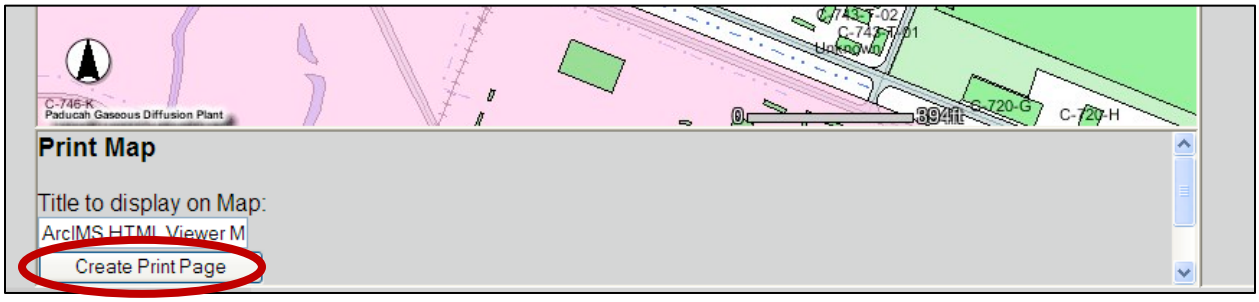
The Print option of the **Site GIS Viewer** Toolbox is used to generate an image suitable for printing.

- Click the *Print* option icon of the **Site GIS Viewer** Toolbox.

A simple input box appears below the Main Map.

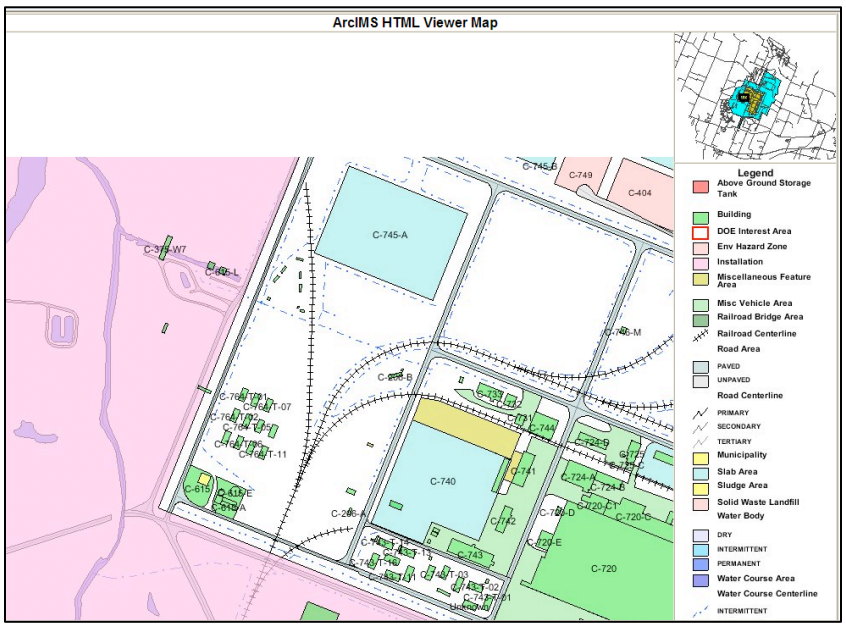
- Replace the default *Map Title* with one suitable for your needs.

- Click the *Create Print Page* button to generate a new window that will have a standard format with the Main Map, Overview Map, and Legend displayed.



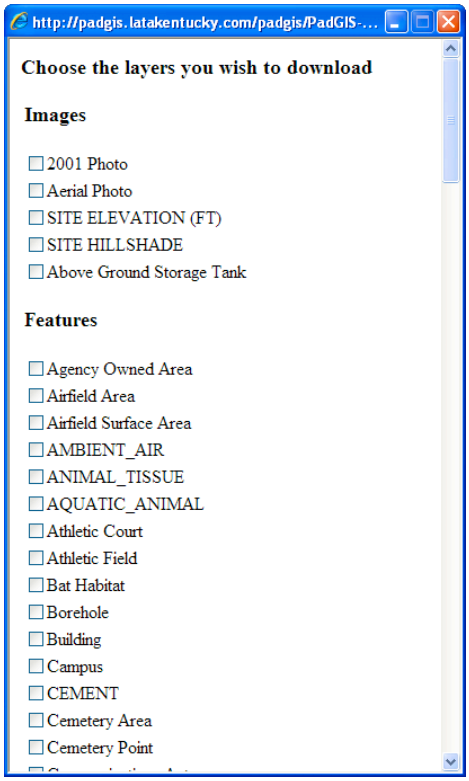
You can then use the File/Print menu item on the Web Browser's menu bar to send the display to your printer.

An example of an image that can be sent to any printer using the Web Browsers Print function is shown below. "ArcIMS HTML Viewer Map" was used as a title in the dialog box displayed in the above example.



Extract Feature Layers Tool

The Feature Extraction Tool in the **Site GIS Viewer** Toolbox provides an easy to use mechanism to extract and download layers and imagery from the **Site GIS Viewer**. These downloads can be used in the ESRI family of GIS Software or with any application supporting the ESRI Shape file® format.



To download layer:

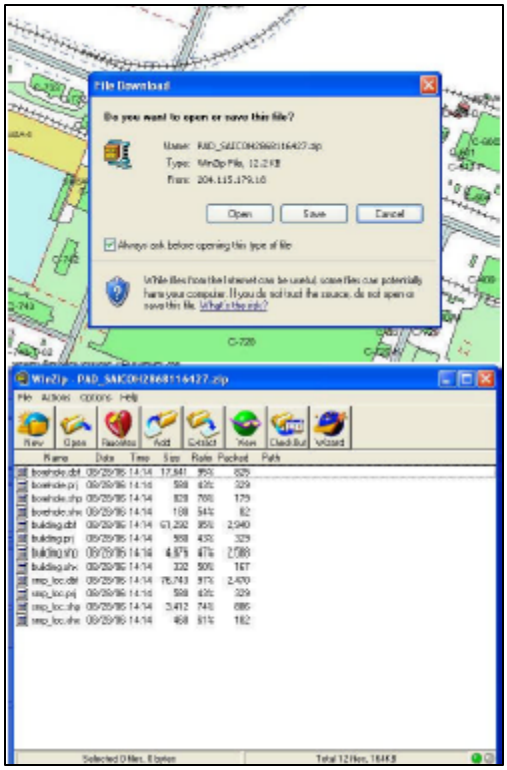
- Zoom to an area of interest where you would like to download shape files and/or imagery.
- Click the *Feature Extract Tool* in the **Site GIS Viewer** Toolbox option.
- Left-click on one corner of the area that you would like to select. Drag the mouse to the opposite corner and click.

A pick list window, similar to the examples on the left, will open an alphabetical listing of all available features/imagery to select. Images first, then features.

- Pick from one to all features in this window. Scroll to the bottom of the list to select the *All Layers* option.
- Click the *Download* button to generate a ZIP file containing your request.

Note: Be careful with the size (area) of the imagery that you select. It is limited to the size that ArcIMS can generate JPEGs and the pixel size of the image.

2001 Photo	1 foot pixel
Aerial Photo	1.63 foot pixel
SITE ELEVATION (FT)	6.56 foot pixel
SITE HILLSHADE	6.56 foot pixel



Once the ZIP is ready for download, a dialog window will be displayed. Click the *Save* button to save the ZIP file to your hard drive.

Note: If your browser blocks downloads, you will need to make the appropriate security setting changes to allow file downloads. On some browsers you can right click the information bar that appears just below the menu bars. This usually has an option to allow downloads.

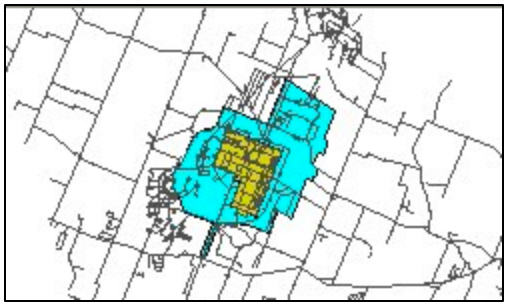
Use WinZip or any ZIP program you have installed and unzip the contents to a directory.

Note: If you make multiple feature extraction downloads of the same features, the downloaded shape files for each feature have the same name.

For example: If you zoom into the North part of the plant and extract from the buildings feature, the ZIP file will contain a shape file called buildings.shp for that area. If you later zoom into another area and extract from the buildings feature, you will get the same named buildings.shp file.

Note: There is a known current error with the *Feature Extract Tool* where if the *Images* option of *Above Ground Storage Tank* is **NOT** selected the tool does not operate properly.

Overview Map



The Overview Map provides a visual reference to the Main Map. As the user zooms in or out of the Main Map, the red box will shrink or grow respectively and re-position over the area currently viewed in the Main Map.

Tip: You can view different areas at the same scale as the current Main Map view by pointing at the Overview Map and left-clicking the new area of interest. This is convenient for quickly moving about the site without having to use the PAN option button.

Setting the Active Layer

The active layer is designated as the target for selecting features, querying analytical results, or as the base layer for doing spatial analyses. In the **Site GIS Viewer**, there are two fundamental active layers, the Media Results Layer, and Non-Media Layers. Only one layer from either group can be the active layer.

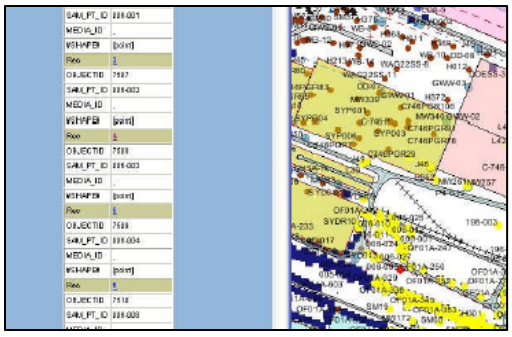
The Media Results Layer is used to search PEGASIS for analytical results of sampling events. The Non-Media Layers searches for GIS features such as buildings, streams, and boreholes.

To set a layer as the active layer,

- From the Main Menu, select either the Set Media Result Layers or the Set Non-Media Layers option.
- Depending on which option you choose, pick one layer to be the active layer.
- From the list, set the active layer by clicking the radial button next to the name of the layer.
- For Non-Media Layers only: if you need to add additional themes to the *Non-Media Layers*, do that prior to selecting a *Non-Media Layers* as the active layer.
- Please refer to the sections on Set Media Results Layers and Set Non-Media Layers for more details.

Note: Be sure to move the active layer to the top of the list to be sure it is not covered by another layer in the Main Map. This is discussed in the Non-Media Layers section.

Section and Current Image



The **Site GIS Viewer** provides various visual aids to help users identify features of interest. Selected features are usually highlighted in YELLOW, but one of the selected features may be highlighted in RED under certain conditions.

In the example to the left, there are two (2) images, one from the Main Map (on the right) and a list of records matching the result of a query or selection by a buffer operation. Multiple sample points are selected and are highlighted in yellow.

In reviewing the list of records, the user selected record number (REC) 5 by clicking on the underlined record number (5). The Main Map was updated and the selected point is now highlighted in red.

Buffered areas are usually highlighted using charcoal-gray shading.

Well and Borehole Information

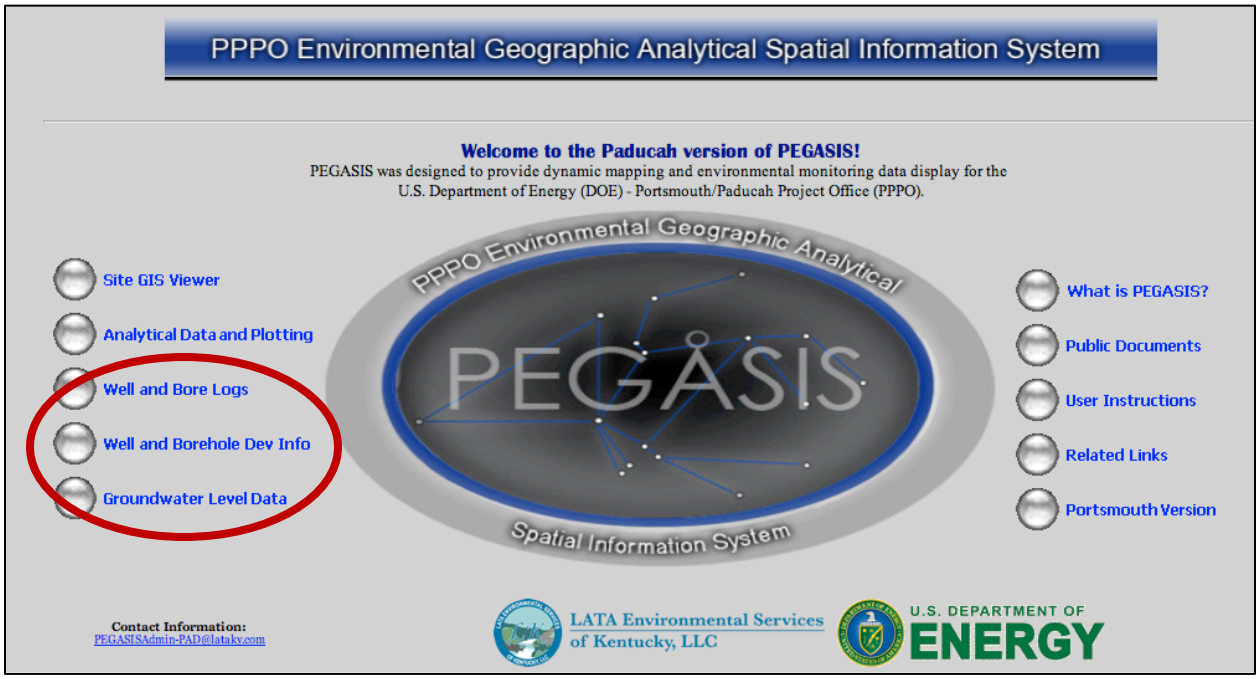
The PEGASIS system allows users to view well and borehole information. There are three options for viewing well and borehole information.

- **Well and Bore Logs**
  View well and borehole information and development logs.

- **Well and Borehole Dev Info**
  Display well and borehole development information, coordinates, depths, screens, etc.

- **Groundwater Level Data**
  Display and graph groundwater level data.

To access the above areas, click on the appropriate link on the left-hand side of the PEGASIS home page.


PPPO Environmental Geographic Analytical Spatial Information System
Welcome to the Paducah version of PEGASIS!
PEGASIS was designed to provide dynamic mapping and environmental monitoring data display for the U.S. Department of Energy (DOE) - Portsmouth/Paducah Project Office (PPPO).
Site GIS Viewer
Analytical Data and Plotting
Well and Bore Logs
Well and Borehole Dev Info
Groundwater Level Data
PPPO Environmental Geographic Analytical
PEGASIS
Spatial Information System
What is PEGASIS?
Public Documents
User Instructions
Related Links
Portsmouth Version
Contact Information:
PEGASISAdmin-PAD@lataky.com
LATA Environmental Services of Kentucky, LLC
U.S. DEPARTMENT OF ENERGY

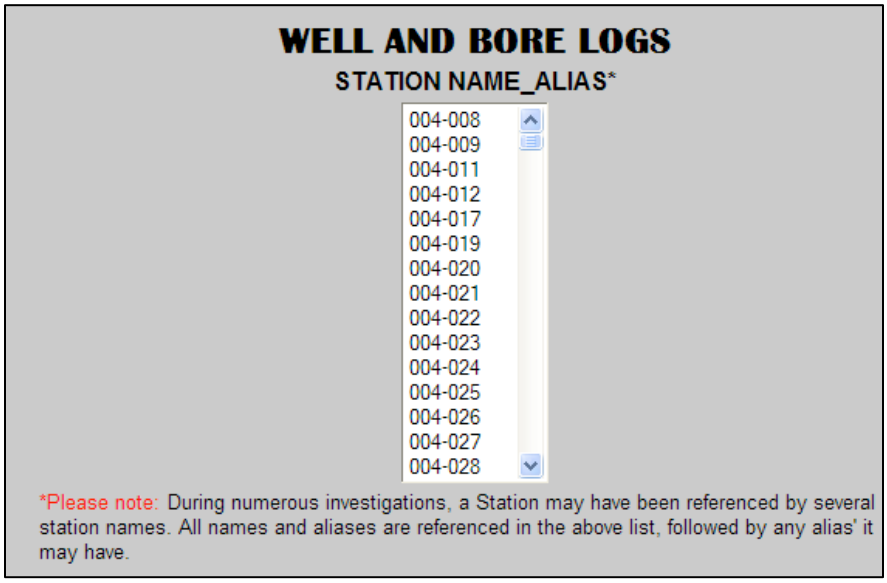
Well and Bore Logs

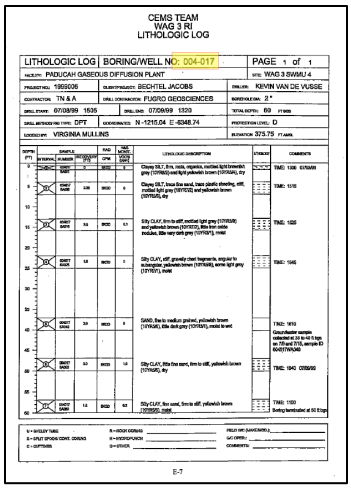
Many of the wells and boreholes have driller's logs, completion reports, photos, and other pertinent data that are not easily or completely copied into PEGASIS. Sometimes these non-textual documents are invaluable to researchers and contractors.

In an effort to preserve and present this data, PEGASIS provides images of these documents to be displayed in the web browser.

To view available well and bore information and development logs,

- Select the *Well and Bore Logs* option from the PEGASIS home page.
- Left-Click on the borehole location you want to view.
- A PDF file will open containing the selected information.



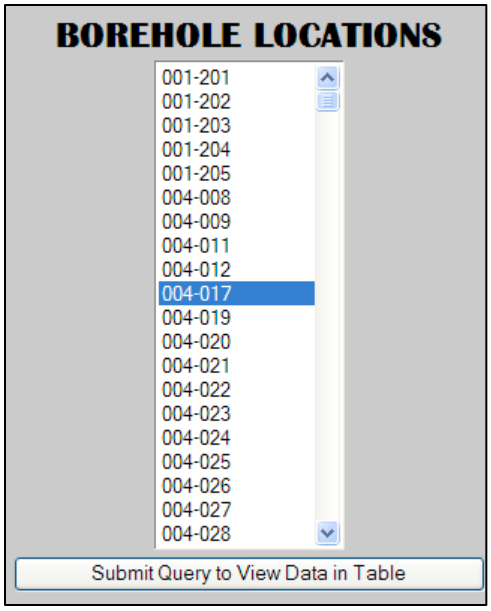


Note: As the text beneath the selection list states, during numerous investigations, a Station may have been referenced by several station names. All names and aliases are referenced in the pick list, followed by any aliases it may have.

Note: This function requires Adobe Acrobat Reader® version 4.0 or higher to view and only one log can be viewed at a time.

Well and Borehole Dev Info

Geotechnical data from many of the wells and boreholes have been collected from driller's logs, completion reports, and other pertinent sources. This data includes lithology, coordinates, screening depths, and interpreted results. This data has been compiled and added to PEGASIS.

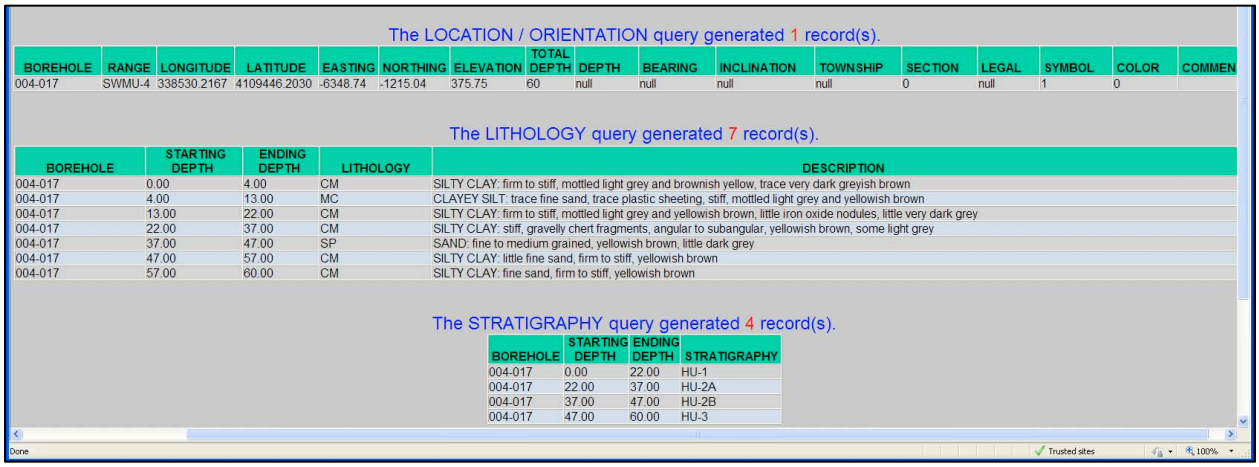


To view available Well and Borehole and Development Information,

- Select the *Well and Borehole Dev Info* option from the PEGASIS home page.
- Left-Click on borehole location you want to view.
- Click the *Submit Query to View Data in Table* button.

Note: Multiple locations can be selected from the list by holding down the CTRL or SHIFT keys during the selection process.

Below is an example of the results of a query in a web browser view.



The LOCATION / ORIENTATION query generated 1 record(s).

BOREHOLE	RANGE	LONGITUDE	LATITUDE	EASTING	NORTHING	ELEVATION	TOTAL DEPTH	DEPTH	BEARING	INCLINATION	TOWNSHIP	SECTION	LEGAL	SYMBOL	COLOR	COMMEN
004-017	SWMU-4	338530.2167	4109446.2030	-6348.74	-1215.04	375.75	60	null	null	null	null	0	null	1	0	

The LITHOLOGY query generated 7 record(s).

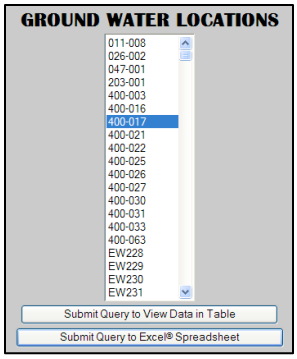
BOREHOLE	STARTING DEPTH	ENDING DEPTH	LITHOLOGY	DESCRIPTION
004-017	0.00	4.00	CM	SILTY CLAY: firm to stiff, mottled light grey and brownish yellow, trace very dark greyish brown
004-017	4.00	13.00	MC	CLAYEY SILT: trace fine sand, trace plastic sheeting, stiff, mottled light grey and yellowish brown
004-017	13.00	22.00	CM	SILTY CLAY: firm to stiff, mottled light grey and yellowish brown, little iron oxide nodules, little very dark grey
004-017	22.00	37.00	CM	SILTY CLAY: stiff, gravelly chert fragments, angular to subangular, yellowish brown, some light grey
004-017	37.00	47.00	SP	SAND: fine to medium grained, yellowish brown, little dark grey
004-017	47.00	57.00	CM	SILTY CLAY: little fine sand, firm to stiff, yellowish brown
004-017	57.00	60.00	CM	SILTY CLAY: fine sand, firm to stiff, yellowish brown

The STRATIGRAPHY query generated 4 record(s).

BOREHOLE	STARTING DEPTH	ENDING DEPTH	STRATIGRAPHY
004-017	0.00	22.00	HU-1
004-017	22.00	37.00	HU-2A
004-017	37.00	47.00	HU-2B
004-017	47.00	60.00	HU-3

Groundwater Level Data

Groundwater Level Data for selected locations can be viewed and graphed.



To view available groundwater level data,

- Select the *Groundwater Level Data* option from the PEGASIS home page.
- Left-Click on location you want to view.

Note: Multiple locations can be selected from the list by holding down the CTRL or SHIFT keys during the selection process.

There are two (2) options for retrieving the data requested:

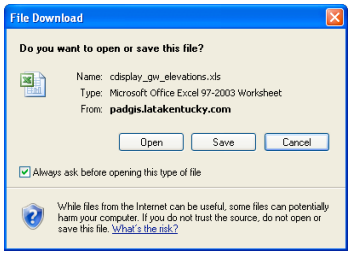
- *Submit Query to View Data in Table* will open a new browser window containing the information.

The query generated 302 record(s).

Ground Water Elevation

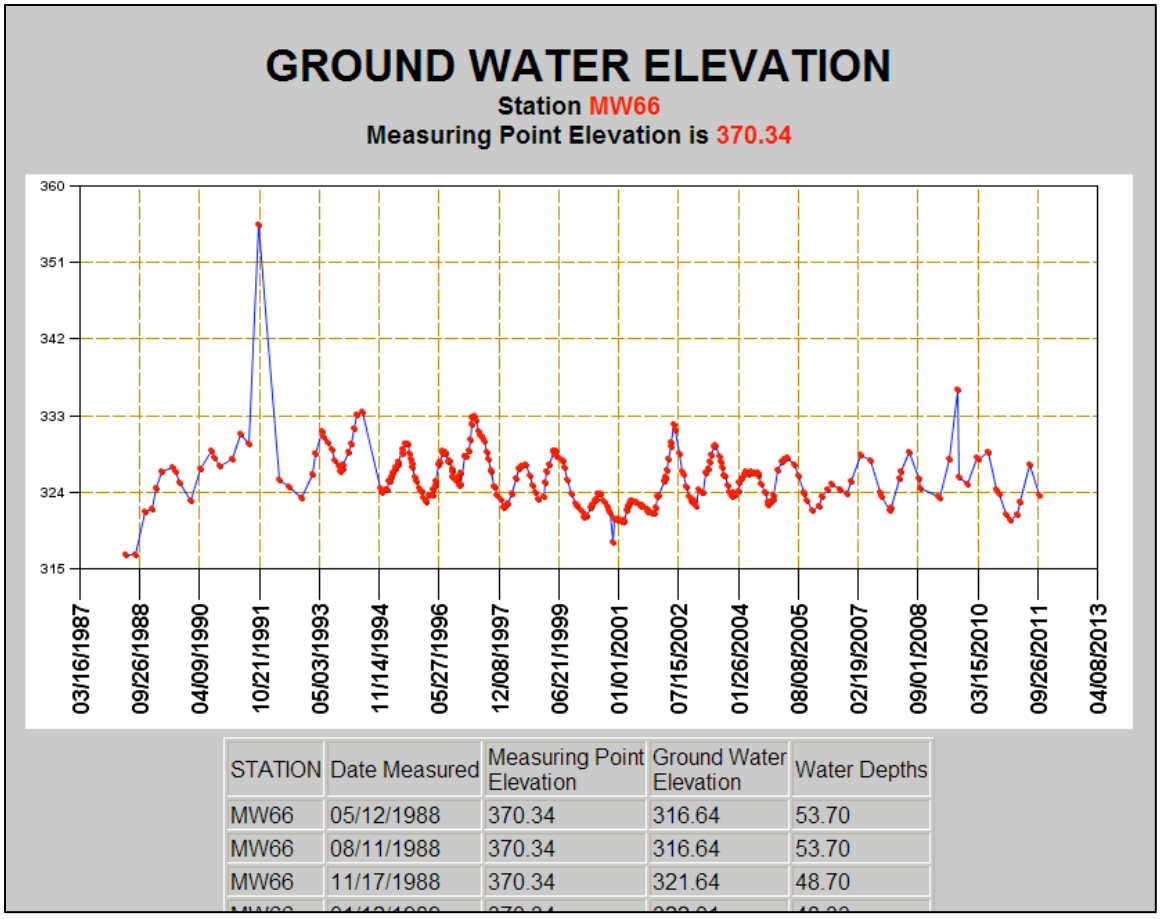
	Station Name	Date Measured	Measuring Point Elevation	Ground Water Elevation	Water Depths
Temporal Plot	MW66	01/10/2011	370.34	320.68	49.66
Temporal Plot	MW66	01/12/1989	370.34	322.01	48.33
Temporal Plot	MW66	01/12/1995	370.34	324.34	46.00
Temporal Plot	MW66	01/12/2000	370.34	321.82	48.52
Temporal Plot	MW66	01/12/2000	370.34	321.82	48.52
Temporal Plot	MW66	01/16/2002	370.34	323.69	46.65
Temporal Plot	MW66	01/18/1990	370.34	323.02	47.32
Temporal Plot	MW66	01/22/1998	370.34	322.24	48.10
Temporal Plot	MW66	01/23/2001	370.34	320.48	49.86
Temporal Plot	MW66	01/25/1996	370.34	322.90	47.44
Temporal Plot	MW66	01/25/1999	370.34	323.45	46.89
Temporal Plot	MW66	01/27/1994	370.34	328.69	41.65
Temporal Plot	MW66	01/27/1997	370.34	328.15	42.19
Temporal Plot	MW66	01/27/1997	370.34	328.23	42.11
Temporal Plot	MW66	01/27/2003	370.34	324.37	45.97
Temporal Plot	MW66	01/28/2004	370.34	324.08	46.26
Temporal Plot	MW66	01/30/1995	370.34	324.36	45.98

- *Submit Query to Excel® Spreadsheet* will prompt you to either open or save an Excel® file containing the information.


File Download
Do you want to open or save this file?
Name: cdisplay_gw_elevations.xls
Type: Microsoft Office Excel 97-2003 Worksheet
From: padgis.latakentucky.com
Open
Save
Cancel
Always ask before opening this type of file
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

In the browser view, to view the change in groundwater level over time for this well,

- Click on Temporal Plot.



STATION	Date Measured	Measuring Point Elevation	Ground Water Elevation	Water Depths
MW66	05/12/1988	370.34	316.64	53.70
MW66	08/11/1988	370.34	316.64	53.70
MW66	11/17/1988	370.34	321.64	48.70

The page will display a plot of groundwater levels for the selected location over time. In addition, a data table with the same data appears below the plot.

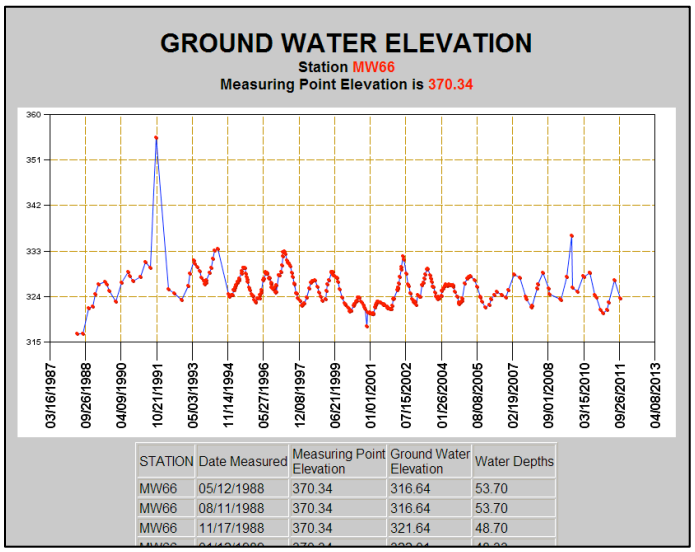
Note: You can get dates and groundwater levels for any point on the graph by simply hovering the mouse pointer over the point of interest. The associated data will automatically appear in small yellow pop-up box.

Note: In order for the graph to display, Java Runtime Environment must be installed.

Temporal Plots

Temporal Plots graphically show the range of values of every analysis done for a given analyte or measurement at a specific location.

- Click the *Temporal Plot* hyperlink,
- A new window will open with a graph for the location.

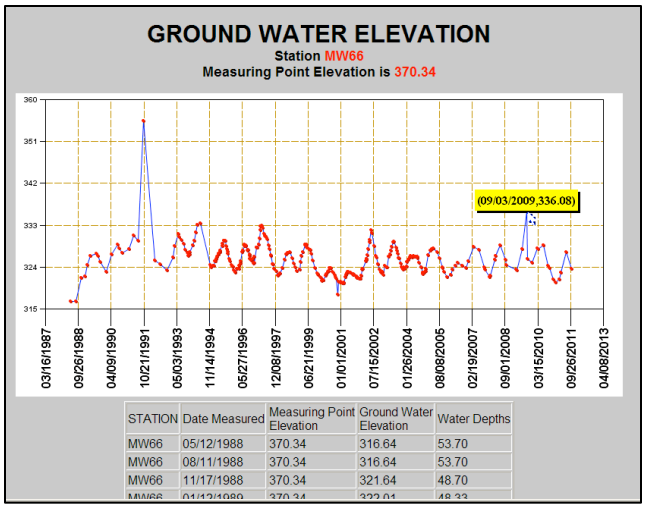


STATION	Date Measured	Measuring Point Elevation	Ground Water Elevation	Water Depths
MW66	05/12/1988	370.34	316.64	53.70
MW66	08/11/1988	370.34	316.64	53.70
MW66	11/17/1988	370.34	321.64	48.70

It does not matter which Temporal Plot option is clicked on for a specific location, as each will result in the same plot. This is because the query is for one analyte (or parameter) for one location. For queries that include multiple locations and/or multiple analytes (or parameters), each analyte location combination will result in a unique temporal plot.

To view the actual value of a specific sample collection date,

- Move the mouse cursor over any data point.



STATION	Date Measured	Measuring Point Elevation	Ground Water Elevation	Water Depths
MW66	05/12/1988	370.34	316.64	53.70
MW66	08/11/1988	370.34	316.64	53.70
MW66	11/17/1988	370.34	321.64	48.70

The associated date and value will automatically appear in a yellow popup box.

In the example to the left, a ground water elevation of 336.08 ft. was measured on 09/03/2009.

This image may be printed by using the browser's PRINT functionality.